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# The Dental Digest

June 1930

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**GEORGE WOOD CLAPP, D. D. S.**

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# THE DENTAL DIGEST



VOLUME XXXVI

JUNE, 1930

NUMBER 6



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### THE DENTAL DIGEST

GEORGE WOOD CLAPP, D.D.S., Editor

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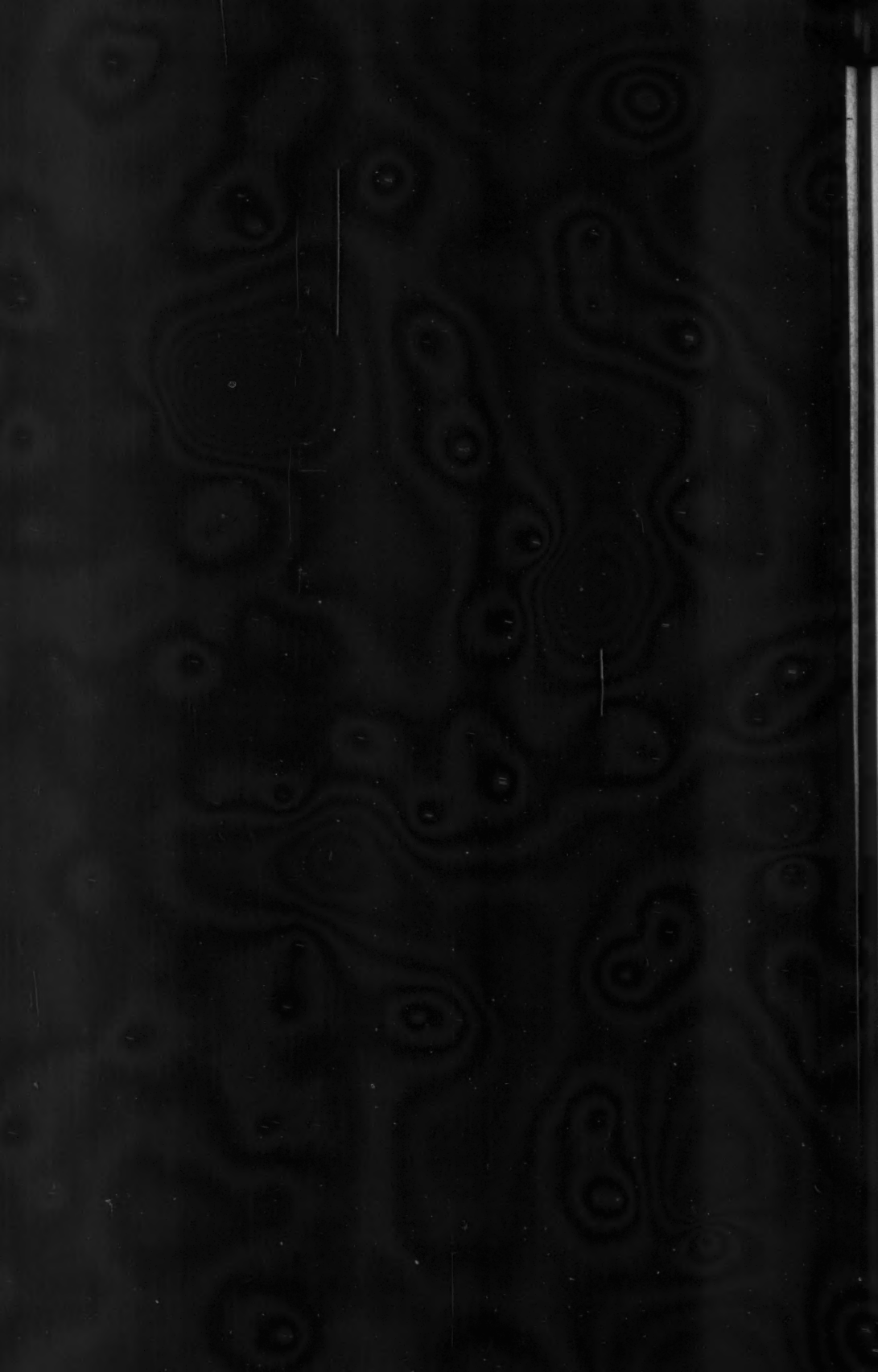
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# THE DENTAL DIGEST

VOLUME XXXVI

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NUMBER 6

## The Technic of Apicoectomy

By M. HILLEL FELDMAN, D.D.S., New York, N. Y.

Chief of Dental Department, Lincoln Hospital; Instructor, General Anesthesia, Allied Dental Council, New York; Author of Textbook *A Manual of Exodontia*

Successful apicoectomy or root amputation depends as much upon a correct clinical pre-operative survey by the operator as on the actual perfection of the surgical technic.

In making his decision as to the availability of the operation for his patient the dentist must decide whether the tooth, after resection of the apex and diseased root portion, will be sufficiently supported by healthy bone to make the root a really serviceable member from the viewpoint of being able to withstand normal occlusal stress. It is not possible to lay down a universal rule as regards the exact amount of healthy root substance and supporting bony investment that is essential to success. Most operators declare that if more than one-third of the length of the root is involved in the pathologic periapical disturbance, the operation of apicoectomy is not advisable. As a general proposition perhaps this is as good a rule as any for the beginner to guide himself by. But there are other considerations which are at times of equal significance.

The firmness of the tooth, the thickness of the root, the density of the alveolar tissue, the particular degree of occlusal stress (which is so variable in

all individuals), all these must affect the judgment of the operator in his decision as to the availability and advisability of the operation in the particular case before him. Furthermore, it is necessary to decide whether it is desirable to operate upon a tooth in the mouth of a patient who may be suffering from systemic ailments in the



Fig. 1

Roentgenogram of a right maxillary lateral incisor which was prepared for apicoectomy. The post-operative view of this tooth is seen in Fig. 10. The diagrammatic description of the successive steps in the operation is shown in Figs. 3-9. The root filling must be extended beyond the point where the apex is to be removed.

treatment of which it may be inadvisable to retain pulpless teeth.

The first step in the operation is the filling of the root canal. This should be done under aseptic conditions. One cannot expect periapical regeneration

of bone around the amputated root-end if bacterial invasion from within the root canal is to continue after operation. For this reason, if the root canal is already filled when the operator views the tooth for the first time and there is an apical granuloma present, as in Fig. 1, it is reasonable to presume that the resection of the apex and its granuloma will only temporarily improve conditions. The same bacterial invasion of the periapical space from pulp-canal decomposition

Since we are dealing with an infected area, it is advisable to resect the apex as soon after the filling of the root canal as is feasible. On the same day is the best procedure. I usually advocate the filling of the root canal immediately before the root apex is to be removed. This avoids a good deal of the soreness following the root filling.

The next step in the operation of apicoectomy, and the first from the surgical standpoint, is shown in Fig. 3. Here are seen, in diagrammatic outline,



Fig. 2

Another practical case of a tooth similar to the one shown in Fig. 1 prepared with root-canal treatment prior to apicoectomy.

will in time again reinfect the field of operation. In these cases it is quite natural to suppose that the root canal is infected, and not only the root apex. Therefore, if the root is to be amputated, the old root-canal filling must be removed and the canal sterilized and filled before proceeding with the apical operation.

In introducing the root filling the operator may carry his material through the apical foramen, as in Fig. 2, or short of the root-end, as in Fig. 1. He should fill slightly beyond the point where the apex is to be cut off. The canal orifice at the amputated root surface must be thoroughly sealed.

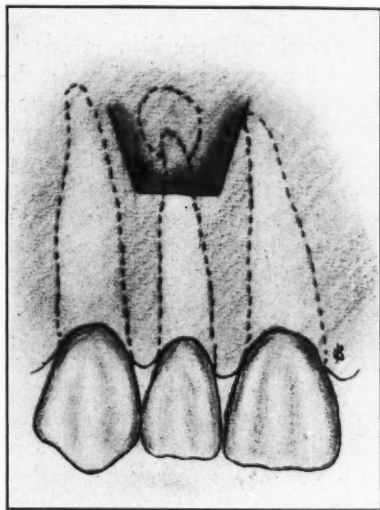


Fig. 3

Diagrammatic illustration of the first step in the operation for apicoectomy—a horizontal incision joining two oblique lateral incisions.

the lines of incision which I favor. I make a transverse incision in the labial mucoperiosteum slightly beyond the diseased area as depicted in the roentgenogram. This incision may or may not be extended to the adjacent tooth areas. I then incise laterally to make



a "box flap," with the lines of incision passing apically at an angle, as shown in Fig. 3.

Personally I prefer this type of incision to the "semi-lunar" line. I feel that with my incision there is less traction of the mucoperiosteum and consequently less tension on the soft tissues

incision here outlined. This is the Williger knife, shown at *a* in Fig. 4. The handle has been modified by the manufacturer, at my suggestion, to make it more comfortable for the operator. The short handle fits well into the palm of the hand and aids in directing the cutting blade.

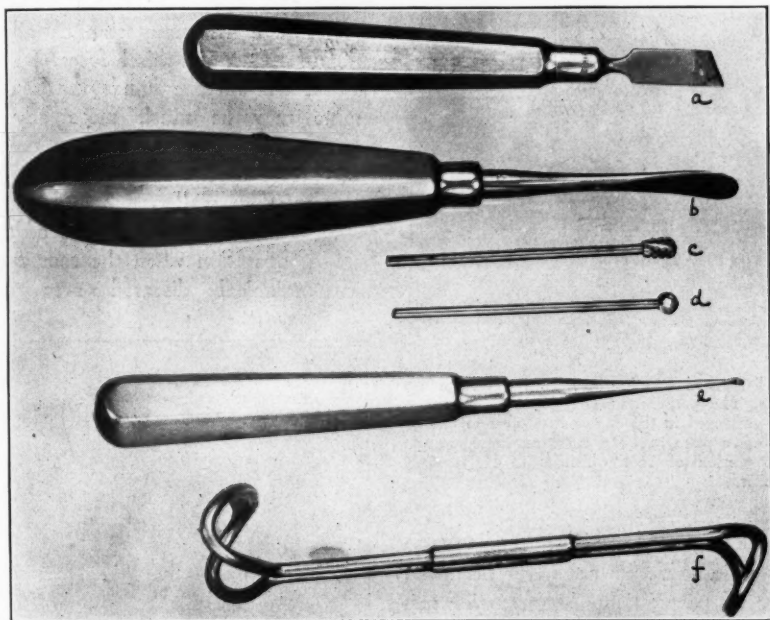


Fig. 4

*a*—The Williger blade with the author's modified handle, making a steady line of incision more possible.

*b*—The type of blade used by the author for elevating the mucoperiosteum and for holding the flap back during operation, known as a periosteal elevator or periosteotome. It serves excellently as a flap retractor and is much superior to the prong type of retractor.

*c*—The pear-shaped bur used by the author to remove the bone overlying the apex and the pathologic area in the operation for apicoectomy.

*d*—The large round bur used by the author for cutting off the diseased apex and trimming the bone margins of the cavity before closure of the wound.

*e*—The small curet favored by the author for the delicate removal of the broken-down tissue at the apical end of the root during apicoectomy.

*f*—Type of retractor for the lip favored by the author because it is least liable to produce pinching of the lip during retraction.

during the operation to produce post-operative discomfort. The type of knife that I use easily lends itself to the

The mucoperiosteum is next reflected from the bone and held back to expose the operative area thoroughly by means



Fig. 5

The second step in the operation for apicoectomy. The pear-shaped bur shown at c in Fig. 4 is employed in the engine handpiece to remove the outer plate of bone overlying the apex and that portion of root which is to be removed with it.

of the very blade which is used to turn back the flap. I do not favor the usual type of prong tissue retractors. I feel that the sharp teeth of these retractors frequently do harm to the soft parts. If the mucoperiosteum has been sufficiently turned back by virtue of a satisfactory incision, there is no need for force in retraction. The periosteal blade suffices quite well to hold the flap away until its subsequent coaptation.

The operator should place on his operating table a small basin of sterile normal saline solution and small gauze sponges. Frequent sponging of the wound with the normal saline acts not

only as a styptic but as a tissue-stimulant as well, preventing post-operative effects of tissue trauma.

With the mucoperiosteal flap retracted, as shown in Fig. 5, I remove the bone overlying the root apex with a pear-shaped bur in the dental-engine handpiece. I do not favor the use of mallet and chisel for this operation. While there are many staunch advocates of mallet-and-chisel force, I feel that in the average hands the dental engine may be much more advantageous. From the patient's standpoint, too, motor-driven force is far less annoying than mallet-chisel procedure.

Fig. 6 shows the appearance of the field of operation when the root apex and periapical diseased area are

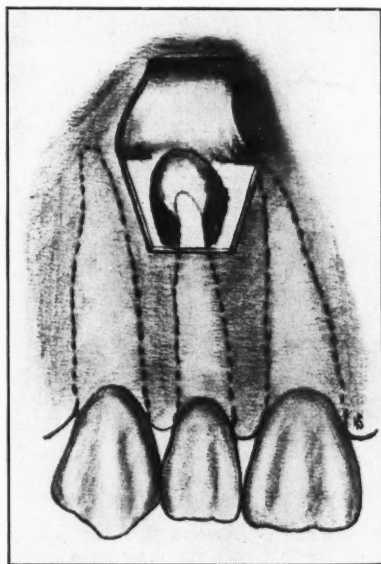


Fig. 6

The view following the operative step in Fig. 5 after the bone has been removed, with the root and granuloma still intact.



Fig. 7

Diagrammatic view of the large round bur as it is used in removing the apex. The bur is applied to the apex, and the cutting is done downward toward the horizontal incision of the mucoperiosteal flap.

exposed by the bone-cutting operation. With a small-sized curet, such as is shown at *e* in Fig. 4, the diseased soft tissue is carefully dissected out of the bony crypt beyond and around the apex.

My next step is to cut off the apex with a round bur such as is shown at *d* in Fig. 4. I commence at the apex and cut down toward the sound area of the root. This seems to yield much better results than the technic I formerly practiced of cutting across the root with a cross-cut fissure bur (Fig. 7). During all this cutting frequent sponging with normal saline goes on.

This I find a most excellent practice and well worthy of emphasis here. With the same round bur I trim the margins of the bone cavity, so as not to leave any points of irritation to the new tissue which is to form around it.

Fig. 8 shows the field of operation as it looks just prior to the closing of the wound. Attention is directed especially to the appearance of the root. The floor of the cavity must be continuous with the sectioned root-end. I find that best results are obtained from such a procedure. It is unwise to operate in such a manner as to leave a portion of the root projecting up into the cavity. The reason for the failure would be the denuded cementum of the

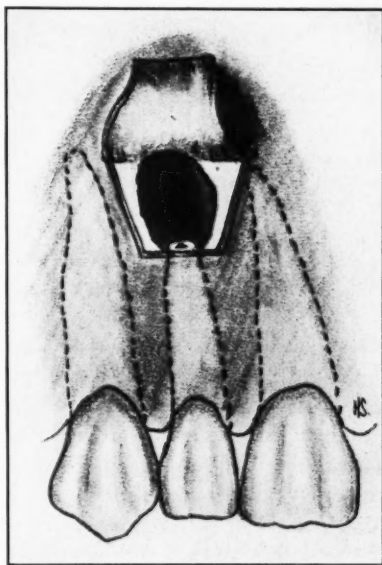


Fig. 8

Diagrammatic view of the root following resection of the apex and the removal of the granulomatous tissue. Cross-section of the root-end clearly shows the end of the root-canal filling.

root whose nourishing pericementum has been stripped off during the operation.

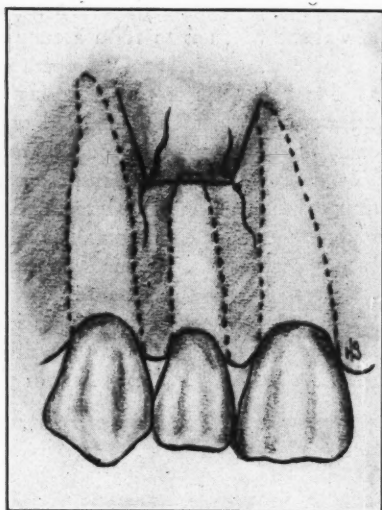


Fig. 9

Diagrammatic view of the mucoperiosteal flap replaced and sutured to the points from which it has been detached.

Some operators favor the coating of the root-end with silver nitrate. While I have in the past used this, I have not found any advantage in so doing. I believe in applying simple surgical principles and depending upon the healing agency of nature to do the rest. I find that a thorough irrigation of the cavity of operation with hot normal saline solution before the closing of the wound is a wonderful aid to good healing.

Fig. 9 shows the mucoperiosteal flap coapted with two sutures. Sometimes a third suture is called for in the center. Usually one suture at the lateral bound-

aries of the incision is all that is required. No drains are needed nor is it necessary to deposit any antiseptic dusting powder in the wound before readapting the mucoperiosteal flap. I choose to look upon this as a closed cavity analogous to other operations in the body where the tissues are closed up following surgical intervention. Orthoform and aristol are still applied by some operators to the wound before the coaptation of the flap, but in my opinion these drugs interfere with the organization of a healthy blood clot. Perhaps that is why they find it necessary to "drain" the field following the



Fig. 10

Post-operative roentgenogram of tooth shown in Fig. 1.



Fig. 11

Post-operative roentgenogram of tooth shown in Fig. 2.



tissue suturing. The suture material I used is a fine black silk thread. Horse-hair, dermal suture and catgut are enjoying considerable vogue in some hands, however. It is purely a matter of personal choice.

Figs. 10-11 show post-operative roentgenograms of practical cases of apicoectomy performed on the teeth shown in Figs. 1-2. The drawings accompanying this treatise portray diagrammatically the treatment of the

right maxillary lateral incisor in these roentgenograms. I am indebted to Herbert Silvers for his assistance in preparing these sketches. I trust they may be of help to the general practitioner who is desirous of undertaking this work. In this connection I would urge that facility of technic be developed on the dry skull first. Here, as usual, practice makes perfect.

730 Fifth Avenue



[EXPECTING TOO MUCH]

*In all but the most simple cases, the complexity of the problem and the many fine discriminations necessary in the sequence of steps should point forcibly to the rashness on the part of many dentists of furnishing merely an impression and a "bite" to a dental laboratory with the expectation of receiving in return a restoration worthy of a place in a human mouth. Although the actual construction of the most intricate appliance may be delegated to a skilled technician, the problems of occlusion (to say nothing of the other problems) cannot be satisfactorily solved without an intelligent consideration of the factors enumerated. The dentist is the only person in a position to comprehend these factors, and it is he who should design the restorations in order to insure control of the various phases—including those which pertain to occlusion.*

—SEARS.

## Bridge and Crown Prosthesis\*

By STANLEY D. TYLMAN, B.S., D.D.S., Chicago, Ill.  
Head of Crown and Bridge Department, University of Illinois, College of Dentistry

The subject which I am going to present deals with some factors that are essential to correct crown and bridge practice. In considering the problem of bridge prosthesis it is essential that thought be given to a preliminary survey and an understanding of existing conditions with regard to a probable prognosis, both mechanical and biological. Important as they are, the tendency in the past has been to overemphasize the mechanical aspects to the depreciation of the physiological and biological. Many a failure in fixed bridgework may be traced to this situation. It is because of these conditions that the country has been inundated by a wave of removable types of restorations. The profession as a whole has been misled by the removable enthusiasts in not distinguishing between the proper causes and their effects. The attention of both sides has been focused on the problem of mechanics, refinement of technic, and an improvement in the materials used, but they have failed to appraise fully the importance of a proper diagnosis, upon which the subsequent mechanical problems must be founded.

Where one man is an advocate of the removable type, there are two or three advocating the fixed type. Each side presents valid arguments in sup-

port of its cause, and each side blames the other for the failures and evils occurring in its type of restorative work.

In reviewing the literature we find that, essentially, both sides are not entirely wrong. There are indications for each. We feel that in the majority of cases—and this usually includes patients between the ages of twenty and forty requiring bridge restorations of one type or another—the fixed bridge or its modifications is predominantly indicated.

In a check-up of our records, involving approximately 1,000 consecutive cases, we find that in men restorations involving one or two missing teeth predominated between 20 and 29 years; in fact, 44% of bridge restorations for men patients come within this period of life. In the case of women our analysis shows that 46% require bridge restorations between the ages of 30 and 40. Does not this ratio connote a biologic relation between sex, age and restorative dentistry?

We classify bridge restorations into two general types: (1) the fixed and its modifications, and (2) the removable. Of the fixed type we have those in which the terminal pontics are rigidly attached by means of solder to the abutments. A modification is the stress-breaker or the semi-fixed type, which permits a limited degree of movement through the employment of a pin or lug in a socket in one of the attachments. Finally, we have the can-

\* Given before the Twenty-fourth Annual Meeting of the Marquette University Dental Alumni Association, Milwaukee, Wisconsin, November 14, 1929. (From a stenographic report.)

tilever type, which consists of a suspended pontic rigidly attached to only one abutment. Very often we resort to a combination of the various types.

Removable bridges, as distinguished from the so-called partial dentures, are tooth-borne appliances which may be inserted and removed at the will of the patient and are of two general types, those employing the various kinds of clasps and those using friction appliances, of which the Roach, Chayes and others are examples. We believe that each type has its place in dentistry, but all types must be determined by biologic and mechanical factors.

All things being equal, when one or two teeth are missing we believe that the fixed type is the restoration of choice. Where a greater number of teeth is involved, our preference would lean toward the removable. Even in the latter circumstance there are occasions when the fixed type may be safely employed. An example of this may be cited in a cuspid-to-cuspid restoration where the roots are long, the attachments firm and the investing tissues normal. We have placed a number of these restorations, and they are standing up over varying periods of time, both clinically and radiographically.

The fixed type of restoration is further indicated on abutments, one or both of which may be slightly loose. It has been shown by some research workers that a fixed appliance in many instances tends to assist nature in restoring the stability of the tooth and the tone of its surrounding tissues.

Where we find two abutments in such axial relations that the insertion of a rigid fixed bridge would be difficult or impossible, we resort to the use

of the so-called stress-breaker or semi-fixed type of bridge. Our records show that in bridges restoring one tooth this is the predominating type. In addition to permitting a relatively individual movement, which the protagonists of removable bridgework advocate, it permits greater ease of installation. Care must be exercised in the use of a stress-breaker that the direction of stress does not dislodge the lug.

The cantilever type is used only in rare instances. It is usually employed in the lateral restoration. In such cases the cuspid acts as the abutment.

Occlusion, direction of stress and the condition of the investing tissues are the factors governing our decision. In such cases, where the edentulous area is long, where the gingival occlusal distance is short, where the available abutments are physically unfavorable, that is, a short root, a small amount of peridental attachment, a short crown, or where the patient's oral condition is habitually neglected, in such circumstances some type of removable bridge is indicated. One of the essential considerations in all cases is whether the resistance to the stress is sufficient, first, the biological resistance, and, secondly, the mechanical.

The biological resistance centers around the general health and resistance of the patient, the type and degree of attachment, the peridental membrane, the amount and character of the supporting bone, and, finally, the degree of force exerted during mastication. From the mechanical standpoint it is essential that the abutment be prepared properly for the reception of a well fitted attachment, that the attachment be constructed of sufficiently rigid

metal to withstand the stresses exerted not only upon the individual tooth but also upon the pontics, that the attachment have sufficient mechanical retention to resist all torsional and lateral displacing forces, that the tooth anatomy be characteristically reproduced without an increased occlusal area, and, finally, that the pulp be not involved, primarily, as a result of the preparation and, secondarily, as a result of the proximity of the metal to the pulp.

With this panoramic survey as a basis, let us consider other factors. To conduct a survey satisfactorily it is advisable that radiograms of each tooth and the edentulous area be available, that full mouth study casts be mounted and articulated, that a complete case history be obtained and a thorough clinical examination be given, in addition to a study of individual teeth. By this means we are enabled to determine the relations that one group of teeth bears to another and to the supporting tissue, also what effects their physical and mechanical relations produce in physiological or pathological reactions. The degree of functional activity may be more easily and accurately determined. The distribution of stresses and direction of applied forces are also readily discernible. An examination of the study casts will often disclose conditions that are hidden or obscure during an ocular inspection.

Very often where an extraction is of long duration we find that opposing teeth have gravitated or risen in their sockets to such a degree that, unless this condition is rectified, the construction of a bridge conforming to the accepted laws of articulation and occlu-

sion is impossible. It is difficult at times to appreciate the degree of inclination of the tooth by direct observation in the mouth. This explains why so many teeth inclined beyond the angle of safety are used as abutments, especially in the mandibular arch. Leverage so produced will inevitably destroy the usefulness of the bridge. Teeth that have moved from their normal position in the arch or have tipped mesially or distally should be brought into their proper relation by orthodontic procedures, if possible.

It will be noticed that the majority of patients with an edentulous area favor one side. This results in a difference of the supporting structures. Nature compensates for increased function within certain limits by increasing the resistance of the foundation. She does this by gradually changing the quality and distribution of the supporting structural elements sufficiently to harmonize with the increased activity. The opposite result is likewise true. Where a part is gradually falling into disuse or partial use only, nature will recognize the condition by a gradual decrease of the powers of resistance and a lowered state of functional activity in the supporting tissues.

In tests of several hundred patients we have invariably found that in a partially edentulous mouth the poundage exerted is on an average one-third of that found in normal mouths. The interesting feature, however, is the finding that when a mouth partially edentulous is reconstructed with bridges, the average poundage in that mouth increases to such a degree that at six-month periodical examinations the increase is quite noticeable. It is



rare, however, to find that the restored mouth recuperates entirely so as to attain the normal average poundage.

This incomplete regeneration is due not to mechanical deficiencies but rather to a permanent injury which the supporting tissues sustain. By our restorations we are able to restore an edentulous area to normality only within the limits of the injury inflicted. We cannot add to the tissues; we restore only what is left.

A word about treated teeth. There are those who exclude treated teeth and confine their abutments to teeth with vital pulps only. Such a position is unfortunate. In a study of our records we find that for every five abutments with a vital pulp we used one pulpless tooth. In addition, we found in subsequent periodical check-ups that of these treated abutments only  $\frac{1}{2}\%$  failed. Does not such a percentage of success justify a continuance of a tolerant attitude toward the use of a properly treated tooth as an abutment?

On the other hand, is there not the possibility of danger lurking in the too free use of large metallic attachments on teeth with vital pulps? We have been warned by research workers of possible pathological sequelae of pulps slowly degenerating under metallic restorations. Carelessness or poor judgment may result disastrously in either case.

The ideal attachment should exert a preventive, a retentive and a restorative function. The first and most important quality is pulp conservation, not only at the time of preparation but during the years that are to follow the insertion of the bridge. Secondly, we must maintain sufficient extension

of margins to prevent recurrence of decay. Thirdly, we should conserve tooth structure consistent with mechanical retention, sufficient to overcome displacement forces.

The attachments at our disposal are the inlays in three-quarter preparations. A word regarding each. The two-surface inlay is usually used in conjunction with the semi-fixed type of bridge to support the rest of the lug. It is not ordinarily attached to the pontics by means of a soldered union, except where the opposing arch carries a tissue-borne appliance. The three-surface inlays are employed in rigid fixed bridges. It is necessary when this attachment is used that there be sufficient gingivo-occlusal height to afford an efficient gingival friction between tooth and casting. Where greater strength is needed, the three-quarter may be used.

The technic and instrumentation are quite simple and the inlays should be able to withstand great stresses. We favor the preparation with a gingival bevel and no incisal groove. If the two axial grooves appear to have sufficient strength, we resort to the use of a pin in the cingulum and a boxing of the actual grooves. The gold crown on posterior teeth is used as a last resort, but when it is indicated we need not hesitate to use it, seeing that it is possible to construct it in such a manner that after many years of service it will remain useful and the tissues adjacent to it normal. Our clinical records reveal that in 300 consecutive restorations of this type, made by students, those causing trouble are less than 1%. The gingival tissues in contact with properly fitted crowns show that the

same state of health exists as with tissues in contact with the gingival region of a well finished inlay. The crowns referred to are constructed by the pure gold band and cast contour technic, which permits reburnishing, following the casting of the gingival and occlusal portions of the crown.

A great deal of effort has been expended on the pontic by various men to present the essentials of a permanent and steady hygienic and myogenic result. It is quite simple in principle, application and construction, and yet what percentage of all dentists are placing the pontics with glazed porcelain in contact with the mucosa? We make it a practice to bring pontics in contact with the crest of the ridge, both upper and lower. Where in the mandibular arch there exists a great deal of resorption, we allow a space between the pontic and the ridge. That is the only place. To obtain the correct degree of pressure of pontic against the tissues, we have found that if the tissues are contracted prior to the final impression, we obtain a cast of the tissues in this condition, which we term *physiological tension*. The pontics are then baked and fitted to come in contact with the crest of the cast. After completion of the bridge it is set on the abutments, and the tips of the porcelain exert the same tension on the mucosa, and the correct tension is established automatically, whether the mucosa be thin and firm or thick and flabby. Scraping the cast is guesswork. Such a physiological tension on the tissues will not cause a resorption or a pathological hypertrophy of the gum tissue.

Just a few words regarding the

porcelain root extension type of pontic. After careful tabulations and study we have come to the conclusion that this type is indicated primarily in the anterior region. In the posterior teeth we prefer to let the sockets heal and then use the saddle types of pontics. When the root type is used, care must be exercised to avoid impingement of porcelain against bone and not to extend it into the socket more than one-fourth its depth. It may be used only when there is a sound plate of alveolar bone and healthy surrounding tissues. The presence of pathological conditions precludes its use.

The occlusal area of a pontic should not exceed that of the original tooth; in fact, it should be slightly lessened by decreasing the bucco-lingual distance between the cusps. In the lingual, one-half the pontics should be narrow for similar reasons. Natural grooves should be accentuated and the supplementary ones supplemented with the idea of supplanting stresses on the supporting structures.

During the past several years not only have we kept an accurate record of the types of restorations placed, but we have recalled patients periodically for clinical and radiographic examinations to determine, if possible, the tissue reactions of such restorations. Many operators consider their task ended when the restoration is cemented. In reality the work in hand has just begun. Unless we tabulate carefully clinical findings and radiographic records for future follow-up examinations, how can we expect to place this phase of restorative dentistry on a truly scientific basis? How can we honestly tell our patients that our restorations are

not injuring their health if we have no definite data to verify our opinions?

Radiographs are valuable before any work is undertaken in the mouth, but they are doubly so after the restoration is in place. In our experience we have found that many crowns and bridges have been saved by such a systematic check-up. Overhanging margins, left-over particles of cement, etc., have been called to our attention and the condition rectified.

To carry our effort to its logical conclusion, we make an endeavor to save all teeth extracted which carried

crowns or bridge attachments. These are fixed, decalcified and, after proper staining and mounting, studied. Some of the data collected so far are quite enlightening.

In conclusion, permit me to state that it is not so much a matter of whether we place fixed or removable appliances as it is a matter of using the correct type in certain circumstances. Either type will give service or cause harm, depending upon the judgment, skill and care expended upon it.

185 North Wabash Avenue



[EMPIRICISM]

*As long as we insist on traveling the road of progress without the guide of control and system in observation and record, we enhance the opportunities of the charlatan and the quack, the men who continually beset us with half-baked ideas, with endless new "technics" that have never been through the fire of true research. With this goes hand in hand the variety of those afflicted by the clinic and platform obsession, as well as the cupidity of those who seek to exploit us and the public with things to sell that are not worthy of use.*

—NESBETT.

## Restoring Pleasing Expression with Artificial Dentures

By JAMES P. RUYL, D.D.S., New York, N. Y.

### THIRD ARTICLE

#### RESTORING VIVACITY TO A FACE

Miss E., aged 28, had lost all of her maxillary teeth and the mandibular posteriors. She had been fitted with a maxillary denture which, from a mechanical point of view, was well made. The arrangement of the teeth was such as is seen in a majority of cases, but it was wholly incapable of producing the effect required here. The dentist must have been subconsciously aware of some dissatisfaction, because he put a gold crown on one of the bicusps to break the unpleasant monotony.

When seeing this patient, one was first conscious of the eyes, which were very fine and seemed to suggest that the whole face had once been vivacious, but this characteristic had been lost. Following the extraction of the maxillary teeth the buccinator muscle had sagged, as it always does then, the corners of the mouth had drooped and the expression of the face about the eyes and below them had been changed. The sprightliness of expression was gone and ten years had apparently been added to the age.

The first thought that struck the writer, on seeing this patient, was, "Here is a good-looking girl being made homely by the drooping of the face and the tired expression about the

eyes. It ought to be possible to put the 'kick' back into those eyes."

Only four principal steps were necessary, as follows:

- (1) To lift the buccinator muscle on both sides.
- (2) To lift both corners of the mouth.



Fig. 1

Old denture, showing square arch form.

- (3) To raise the edges of the laterals a little above the level of the edges of the centrals, so as to form the upward curve of smiles and life rather than the downward curve of fatigue and debility.
- (4) To set the teeth in the characteristic tapering arch to harmo-

\* This is the third of a series of six articles by Dr. Ruyl on this subject.



nize with the face form, instead of in the square arch, as shown in Fig. 1, which was contraindicated in this case.

The buccinator was lifted by means of plumpers, which are a thickening upward and outward of the buccal surfaces of the maxillary denture, from the mesial surface of the second bicuspid to the posterior margin. These

tissues over the plumpers, but must look beyond that localized effect to the entire expression.

The characteristic tapering arch form was very important in this case, because this form narrows the denture and makes the mouth appear less full of teeth, as in Fig. 2. It actually makes the mouth look smaller. It achieves this effect because the maxillary cuspids in



Fig. 2

New denture, showing tapering arch form.



Fig. 3

New denture, side view.

plumpers were a good deal in vogue years ago with some of our leading prosthetists, like George H. Wilson, and they will have to come back into vogue if we are to achieve pleasing results for many patients.

Plumpers are built up "in the mouth" until the desired expression is attained. The guide as to their size in this case was found in the expression about the eyes and at the corners of the mouth when at rest. That is the time when it must not droop. One cannot be guided by the fullness of the

this form of arch are rotated so that the distal angles do not show, as they do in the characteristic square set-up. A variation of half a millimeter in the rotation of these cuspids can be made to change the appearance of the whole face. This set-up, in profile, is shown in Fig. 3.

The results of these steps must have been satisfactory, because soon thereafter the patient married well and has lived happily ever since.

285 Madison Avenue

## Dental Caries and Pyorrhea\*

### ANOTHER APPROACH

By F. W. BRODERICK, M.R.C.S., L.R.C.P., L.D.S.

#### EIGHTH ARTICLE (FINAL)

So long as it was possible to believe that such conditions as dental caries and pyorrhea were simply the results of external factors acting upon the teeth and their supporting tissues it was legitimate to consider that the only relation between dental lesions and general ill-health was one of direct cause and effect; that diseased teeth brought about certain general diseases either directly through their effect on digestion or indirectly through septic absorption or by circulating toxins. I do not wish it to be thought that I, in any way, deny this connection, but I do desire to point out that this new visualization that I put forward opens up new relationships between dental and general health of an entirely novel nature, which, I believe, more correctly explains recognized phenomena, and which should help to elucidate a number of difficult problems in the realm of general medicine. This, I suggest, is a contribution of dentistry to medicine the importance of which it is difficult to estimate.

We have seen that these dental lesions are not in reality disease entities at all, but rather that each is part of a special disease picture, the consequence of an upset metabolism in opposite directions, and that they are, strictly speaking, only by-products of

that upset even at that. The reason for this is that each, as we have seen, in its particular manner is produced not as a direct result of that metabolic fault, but rather as a consequence of an effort of the body to compensate for, and to make the best of, a circumstance which is not the most satisfactory for its general well-being. It is possible, then, that there will exist other consequences of the same metabolic failure which will co-exist with the caries or the pyorrhea, and which, though present at the same time, cannot be considered as being related directly thereto as cause and effect, in that both will be part of the same disease picture and the consequence of the same upset.

Cameron says, "The growing point of medicine today is in the hands of the biochemist. It is the biochemist who is daily making clear things which have hitherto been obscure. In diabetes, in gout, in tetany, in nephritis, perhaps, too, in epilepsy, our ideas have been revolutionized by the biochemist. If we look back over the last century, we can see the warfare over disease proceeding in four great offensives or advances. In the first the methods of physical examination—of percussion, for example, or of auscultation—were elaborated, and the symptomatology of disease was studied critically and minutely at the bedside. Then came the fruitful advance when the post-mortem findings

\* Reprinted from *The Dental Magazine and Oral Topics*, April 1930.

were correlated with and made explanatory of the clinical phenomena. Later we saw the great bacteriological advance of the '80's and the '90's, when almost every post brought news of some new victory in the domain of bacteriology. Now we are witnessing, not as yet the full development, but the beginning of the advance of biochemistry."

It would appear that dental research still lingers in the bacteriological era. This does not by any means imply that the science of bacteriology has nothing more to teach us, but it would appear that the biochemical conception of disease is necessary to explain the difficulties and to fill in the gaps which the study of bacteriology has left.

#### RESURRECTED CONCEPTIONS

Following on the monumental work of Pasteur and Lister, the visualization of diseased conditions which the science of bacteriology inaugurated threw into the shade many of the conceptions of the older physicians, but through the researches of the biochemists some of these are now being resurrected and given a new lease of life. Difficulties, where they exist, are being explained by grafting on to the bacteriological conception that older doctrine of diathesis and constitution, the fundamentals of which are now made plain through the study of endocrinology, as I have attempted to explain.

One of these difficulties relates to the matter of chronic infection, which underlies the whole doctrine of focal sepsis, and which, though perhaps a rational inference of that visualization unmodified by the biochemical conception, does contain elements which are

difficult to correlate with all the circumstances.

We are usually told that the reason that an infection is, or becomes, chronic is that the organisms responsible are those of low virulence. Now, the whole matter of infection being essentially one of a conflict between invading organisms and the resistance of the body, it would seem that an organism of low virulence would be more easily destroyed than one of greater virulence. Consequently the very presence of a chronic infection would seem to indict the body defenses rather than the invading organisms.

In a previous paper I have gone into the matter of bodily defense and have shown that it lies in the realm of biochemistry, brought about through the endocrin autonomic system, the efficiency of which is liable to be seriously affected by conditions dependent upon civilization. From this fact some very important corollaries arise, viz., (1) that chronic infection will be a rare condition in uncivilized races and in animals in a state of nature and will become more common in those peoples in whom the difficulties of adaptation are most marked; (2) that there will exist a relationship between chronic infection, the result of a poor defense which in turn is the result of an endocrin autonomic system not particularly effective, and certain other conditions which are also dependent upon a metabolic error to the same upset of this system; and (3) that all sections of the disease picture brought about by this metabolic error may be co-existent with a chronic infection, given suitable circumstances, without any one

particular part being the direct cause of that infection.

This is extremely important from the point of view of the dentist, because within recent years dentistry has been drawn into the controversy raging around the question of focal sepsis as a factor in general disease, and because, the teeth having been considered to be one of the most important sources of that sepsis, these organs would seem to have been the most constant victims of overzealous physicians and dentists. As they are so available, they have, in the minds of some, been regarded as the natural starting-point in the process of exclusion.

#### THE BEDROCK CAUSE OF CHRONIC INFECTION

Now it is necessary to bear in mind that a dirty mouth, the result simply of neglect, does not in itself imply oral sepsis and need be no more dangerous to health than a dirty skin. As this term is correctly employed, it signifies either the incubation and passage of micro-organisms themselves from the periapical tissue into the blood stream or the circulation of toxins therefrom, or else the swallowing of septic matter from pyorrheal pockets.

It will be obvious, therefore, that the condition precedent to the periapical infection, or to the alveolar destruction which will form the pocket, will be a previous caries or pyorrhea, the cause of which I have shown to be those very same conditions which will allow an infection to become chronic. Thus the bedrock cause of a chronic infection also becomes a pathological biochemical state.

#### A VICIOUS CIRCLE

It has often been asked whether the strain of a chronic infection upsets the endocrin apparatus, or whether the upset endocrin apparatus allows the chronic infection to occur. I suppose that the answer is that the effect of civilization and the strains and stresses that this has thrown upon the endocrin autonomic system is the primary factor, but that, the infection having taken place, this plays its part in still further reducing efficiency—in other words, that a vicious circle is set up. In these circumstances it will be seen that the removal of the focus of infection will simply break this circle at a point where it can conveniently be reached, but that it will not necessarily cure the condition, in that the instability of the endocrin autonomic system will still remain. This explanation will account for the failures attending teeth extraction in these cases, as well as for the occasional successes. It will also explain the reason why these foci are so often multiple, occurring at the same time in many tissues of the body.

The idea that it is the inefficiency of the defensive mechanism rather than the virulence of the micro-organisms that is the principal factor in chronic infection is borne out by the fact that non-specific vaccines, or even such substances as sterile milk, horse serum, or other foreign proteins, have been found to be of great value in treatment, all of which, of course, act by increasing resistance rather than by the formation of specific anti-bodies.

We see, therefore, that chronic infections, metabolic disturbances and dental lesions have much in common in their

origins, and that the relationship between oral sepsis and general disease due to metabolic upsets cannot be summed up as one of cause and effect simply. We arrive, in fact, as a direct consequence of this new visualization of dental disease, at an entirely new viewpoint from which to study the effect of chronic infection on the general health.

This is speaking in general terms, but when we come to consider the various organs or tissues of the body that may become the sources of the infection, we find that differences of local environment somewhat alter the case. The position of the focus consequently becomes of importance.

#### THE SPECIAL ENVIRONMENT OF THE TEETH

As we are, in this instance, considering primarily dental sepsis, it may be wise to note the special environment of the teeth in this respect, as this presents certain peculiar features which are not present in such situations as the tonsil or the gall-bladder. With sepsis resulting from a tooth in which the pulp has died and the pulp chamber become infected, the micro-organisms are so placed that while they are enabled to draw their sustenance by way of the lymphatics and thus live and multiply, they are entirely cut off from the blood stream and all those factors by which the defensive mechanism of the body could deal with them. It would seem, therefore, that even an efficient mechanism would be unable to bring its full powers to bear upon an infection in this situation so as to eliminate it entirely.

Now, Weston Price has demon-

strated that in these circumstances the bodily defenses, defeated in the one direction, attempt to quarantine the infection which it is unable to eliminate, by building up around the apex of the tooth, which is the danger spot, an effective barrier against the passage of the organisms into the blood stream. This barrier is what we know as a granuloma. The very tissue which we have for years looked upon as the evidence of an infection has thus been shown to be the defense against infection. Price shows also that it is those patients who are enabled so to wall off the infected area—as a consequence of a good defense—who remain free from the stigma of such conditions as rheumatism, whereas it is those who are unable to do so in whom general symptoms arise. This work once more demonstrates, I would suggest, not only that this immunity is due to a lack of infection, but also that the good defense which allows of the formation of the barrier shows also a more perfect metabolism, and therefore the disease does not develop.

#### "OVERLOADS"

There is, however, this qualification, that a good defense may be diminished in efficiency by an overload, as, for example, by an additional infection, such as influenza, or by such circumstances as emotional upsets or undue fatigue, in which case the added strain permits the granuloma to disappear, when a susceptibility to general disease takes the place of the original immunity. From what has been said in previous papers it will be seen how these overloads, the additional infections, the emotional distresses or the fatigue, will



act through the endocrin autonomic system and at the same time both upset metabolism and reduce the powers of defense.

I have no space at this time to deal with particular diseases in their relation to dental sepsis as illustrating these points, but I should like to take the opportunity of pointing out that these would seem to divide themselves into two distinct divisions, the one related rather to periapical sepsis, the other to that originating from the pyorrheal pocket. As Weston Price points out, the very conditions which will tend to bring about those in the latter category will be the ones which bring an immunity from the diseases associated with the former. In fact, this observer goes so far as to make the suggestion that the condition which we designate pyorrhea is essentially due to a defensive mechanism which has gone to extremes, and which produces its results by its overactivity. In so far as this idea implies an antagonism between the two conditions, I am in agreement with him, although I visualize the matter somewhat differently.

As an example of this antagonism between different general diseases and their association with one or other types of dental infection I would mention that the rheumatic states would seem to be definitely associated with the periapical forms of sepsis, whereas such conditions as gastric ulcer and pyorrhea are intimately related to one another; not, as I would once more stress, on account of some difference in the organisms associated with either, but rather because each of these conditions rests, essentially, on a different metabolic upset, as does also the asso-

ciated dental lesion with which it is related. The whole matter is intimately connected with the particular constitution or diathesis of the individual patient concerned, which fixes the starting-point from which the stress commences to act.

This being so, consider for a moment the position of the discerning dentist from the point of view of preventive medicine. Not only is he in a position to prevent, through early conservative work, the occurrence of sepsis or to break a vicious circle by timely extraction; he is enabled, through an appreciation of the biochemical changes at work—as demonstrated by the state of the teeth and their supporting tissues—to sum up the diathesis of the patient and by the aid of this to foresee the diseases to which he is susceptible, since he has, in the reaction of the saliva, a guide to his metabolic efficiency and an insight into its errors, with their possible consequences. The saliva is, in very fact, as suggested by Michaels, an index of bodily health of more importance than the blood or urine, in that an examination of these can only demonstrate diseased conditions, whereas the saliva, correctly understood, gives a very fair indication of what in normal circumstances may be expected to come about. In addition to this, the dentist is in the most favorable position to take the necessary precautions to prevent the occurrence of these diseases, even before symptoms of them present themselves, as it will be seen from what has gone before that the treatment which will be indicated to prevent further caries or pyorrhea will be exactly the same as that which will correct the errors of metab-

olism which are also responsible for the general diseases.

#### PREVENTIVE MEDICINE WORTH THE NAME

This is surely preventive medicine well worth the name, and it comes directly into our sphere, for if, as I have previously pointed out, the treatment of such conditions as rheumatism is not completed when the sepsis has been removed and the metabolic error is uncorrected, so, likewise, the treatment of the caries or the pyorrhea is not complete when the tooth has been filled or the pocket eradicated and the cause left still unremoved.

In conclusion, I should like to point out that, although this conception of the origin of dental disease may come as something new and perhaps be difficult for many of my readers to appreciate, it is not in reality so very far removed from many of the suggestions that have from time to time been put before the dental profession. It forms, perhaps, the coping stone of the structure that has been so laboriously built by others and shows how very near we have been time and time again to reaching a solution of our problems, had the workers in this field only carried their investigations just a shade further.

Even the matter of the antagonism between caries and pyorrhea, on which so much of my argument is built, has been suggested by such accepted workers as Von Beust, who asked: "Why does it so often happen that the teeth, without becoming decalcified, succumb to a disease which is characterized by a luxuriant growth of oral bacteria?" Had he gone a step further and pointed

out that rather than a decalcification of the enamel in these cases a hypercalcification was the rule, the antagonism between the two conditions would have been plain. Further, although in a sense the tooth succumbs, in that in time it loosens and falls out by destruction of the alveolar attachment, it only succumbs in that it no longer remains an organ of masticatory value. As a tooth suitable for the purpose for which it was intended, it is improved in that it becomes harder and more resistant to caries. Raper has said that "during the teens and the twenties there is a special susceptibility to caries. . . . After thirty there is a growing immunity to caries and an increasing susceptibility to pyorrhea," showing not only this antagonism, but also that the causative factor behind each condition is one that is affected by the age of the individual. If he had followed up this observation, it would seem almost certain that he would have discovered that these factors must be metabolic in character. Bibby points out that "it is significant that individuals who enjoy relative immunity from dental caries suffer in a great number of cases from diseases of the bones encompassing the teeth." Had he carried his point further and gone into the cases in which this did not happen, and which necessitated the qualification "in a great number of cases," he must have come to the conclusion that there was a constitutional factor operating throughout, on which the whole problem hinged. Pickerill also lays it down, speaking of pyorrhea, that "this may be considered as the pathological antithesis of caries," but apparently he did not continue his

investigations to see how and why the two conditions differed.

With regard to susceptibility to caries Pickerill showed that, other things being equal, the tooth that had been erupted ten years was harder than that which had been erupted two and suggested that this change was due to osmosis of lime salts from the saliva to the enamel. Being overawed, however, by the conclusion of Tomes that the dental enamel was outside the pale of nutrition, he left the matter there. He apparently did not realize that, even if this was so, physical phenomena were not consequently ruled out, and that in these circumstances the reaction of the saliva and those conditions on which this depended were of the utmost importance.

#### FINDINGS OF MICHAELS AND HOWE

Both Michaels and Howe have pointed out that the salivary reaction was dependent upon metabolic circumstances, yet both would seem to have missed the point as to how general metabolism brings about these changes and the circumstances behind the metabolic variations. Howe believes that excess of either proteins or carbohydrates in the diet will increase the acidity of the saliva through deficient oxidation, yet again fails to correlate these findings with those of others. Pickerill also suggests that an excess of  $\text{CO}_2$  in the saliva or a deficiency in chlorid ingestion or, again, the presence, for some unknown reason, of acid phosphate in that secretion may affect its reaction, yet he did not realize that the  $\text{CO}_2$  content depended upon the  $\text{CO}_2$  in the blood, that chlorid ingestion was related to blood reaction

through gastric digestion, or that acid phosphate in the saliva was intimately related to the matter of compensation of the acid-base balance of the blood. Notwithstanding this, however, he gives it as his opinion that "caries may be regarded as a symptom of the failure of the nervous mechanism controlling salivary reaction to function normally." How far all these suggestions can be brought together and the findings explained on a common basis, my readers are now aware.

Again, Howe, realizing that children with excessive caries often showed a profuse saliva very alkaline in reaction, has attributed this fact to the pain and discomfort suffered therefrom, but he has not followed up this observation and shown how these conditions bring about this increase in quantity and this alteration in reaction nor attempted to explore that interesting territory that joins the physical to the psychological, which teaches us so much.

Mrs. Mellanby has shown that a lack of Vitamin D in the pre-eruptive period will result in teeth with badly calcified enamel, but that they may be saved from carious destruction after eruption by a diet which is improved in this particular. It will now, however, be realized that the foods which are rich in this vitamin are those which contain much mineral matter and are alkaline-forming rather than acid and tend therefore to preserve rather than to upset the acid-base balance of the blood. But Mrs. Mellanby herself would seem to believe that the lack of vitamins is only one cause of caries.

Weston Price puts forward ideas which have much in common with those which I have written about now

for some years, and our differences are rather those of detail. He stresses particularly the antagonism between caries and pyorrhea and the fact that such physical changes as ionization may take place even if direct metabolic and nutritional changes in the enamel are impossible.

#### EXPERIMENTS OF MCINTOSH, JAMES AND BARLOW

And, finally, McIntosh, James and Barlow in their experiments in the *Bacillus Acidophilus Odontolyticus* reached a dead-end when they found that they were unable to produce caries artificially in monkeys thereby. This was because the predisposing causes of that condition were not present. Bunting upholds this conclusion. He says that "there may exist a metabolic control, and the degree of activity of this organism may depend on general metabolic changes related to age, general health and general bodily metabolism of the individual, which by their effect upon the character of the oral secretions and local environment, produce conditions which are favorable to its growth." This will sound very familiar to any one who has read through this series of articles.

These and many other suggestions have been brought forward to account for these conditions and have been discarded one after another because they did not account for every case. I suggest, however, that if they are correlated and carefully considered, it will be found that behind each of them there is that common denominator of an acidosis in the one case and an alkalosis in the other, which is the factor we are seeking.

#### BREESE AND MRS. MELLANBY

Breese, criticizing Mrs. Mellanby's conclusions and basing his criticism on his work at a Jewish hospital of 400 children, of whom 12% of the boys and 16% of the girls had no caries, says, "Many of these have been in the schools four, six, eight, or even ten years, passing right through their school lives needing no dental attention whatsoever; and side by side with them, under the same roof, subject to the same discipline as regards artificial cleaning with the brush, under a similar dietetic régime, even the very sequence of the diet the same, are found others in whom caries is perpetually reappearing, and of whom the one thing that one can safely predict at every succeeding inspection is that they will certainly be found candidates for an early sitting in the dental chair."

This criticism is most damning of any purely local factor being alone the cause of caries. But it does not in any way touch the theories that I have brought forward nor need it upset Mrs. Mellanby's ideas in the slightest, if it is remembered that there is a constitutional factor, an endocrin autonomic stability, which is an inherited balance which sets the base line from which the factors of environment start to act. This is an essential part of my theories, accounting as it will for very many of the cases in which caries or pyorrhea may make their appearance with a much less exciting cause than in others not affected in the same manner, as instanced by a comparison of two brothers, whose cases are thus described by Bunting: "Two young men who were brothers, and who, although of

approximately the same age and living under practically the same environmental conditions, presented very marked differences in their dental health and susceptibility to dental caries. The younger, aged eighteen and a half, was a large well-built young man, apparently of the lymphatic type, but actually possessing a highly nervous temperament. He had large bones, and his teeth were large, broad and well formed. The molars and bicuspid presented low cusps which were well worn. Upon inquiry it appeared that he had inherited the lymphatic stature of his mother and the nervous temperament of his father. As far as dental caries was concerned, his mouth was entirely free from any apparent defect, and when cultures were taken, it was found

that there was no evidence of *B. acidophilus*.

"His brother, aged twenty, was much smaller in stature, of a typically nervous type, while his teeth were manifestly poor in quality, having high interlocking cusps. Although his life conditions, as far as environment was concerned, were identical to those of his brother, he had considerable dental caries, and cultures taken from his mouth were positive to the *B. acidophilus*."

I submit that we have here a theory of causation of dental caries and of pyorrhea which deserves consideration, in that it would seem to cover all the ground, to explain so many of the at present unexplained relations, in addition to being in tune with modern medical thought.





## Treatment of Vincent's Angina or Trench Mouth

By B. BARRYMORE MARCO, D.D.S., New York, N. Y.

For many years various diseases of the mouth were treated by the physician before the laity began to realize fully that the dentist was more capable and better equipped to cope with these disorders. The mouth being his specialty, to which he had devoted years of intensive study, the dentist was the logical man to handle the situation.

The dentist today is no longer looked upon as a mere tooth-filler, a puller of teeth, a maker of bridges and plates, but he has become a necessary factor to the health of mankind. He must possess many qualifications. He is a surgeon, an artist, a mechanic and a healer.

There are many diseases of the mouth with which we come in contact, but I propose in this paper to consider but one, and recently that one has spread by leaps and bounds until it now appears quite regularly in ordinary practice. Vincent's angina, commonly known as *trench mouth*, is the disease to which I refer, and it would be well for all dentists to study it more thoroughly. This disease is not new, it has been known for a century or more, but only since the World War have we had a clear understanding of its treatment.

Vincent's or trench mouth, as it is commonly called, is an infectious disease which is very easily transmitted. The patient must be advised against kissing and must have his own drinking and eating utensils.

Trench mouth has been found in such tissues as the alimentary tract,

peritoneum and mucous membrane of the mouth and pharynx. The organisms found in all cases are Vincent's spirochete and the fusiform bacillus. Vincent's spirochete is a spiral-shaped organism, larger in the center than at its ends. It stains readily with carbolfuchsin or methylene blue. It is an anaerobe and will not live in the presence of oxygen. The fusiform bacillus is long and rod-shaped and is easily stained with carbolfuchsin. Both organisms must be present to diagnose the disease definitely.

The gums are usually inflamed, chiefly around the infected parts are very painful to the touch and bleed easily. A grayish-white membrane is always present. In most cases this is easily removed, but forms again very quickly. Beneath this membrane is found an inflamed, bleeding surface. I have seen cases where the pain was so excruciating that the patient could not eat solids and had to be fed liquids through glass or straw tubes. In some cases you will find considerable hypertrophy and destruction of tissues. There is a peculiar odor to the breath, and at times there is quite a rise in temperature.

The cures for Vincent's angina are many and varied, but each case must be studied carefully. What might be successful with one may be of little value to another. I shall first describe several treatments as outlined by different dentists and later will define my own treatment.

First the patient must be instructed to refrain from smoking and also cautioned against the use of highly seasoned and spicy foods, acids and salt. The bowels must be kept thoroughly open. The diet should consist of eggs, chicken, fish, milk, plenty of spinach, lettuce, cabbage, stewed fruits, and a glass of orange juice daily.

#### TREATMENTS

I. Spray mouth with peroxid of hydrogen, 50% solution. Remove film, isolate each section, apply 20% solution of silver nitrate, then cover the area with a solution of equal parts of tincture of iodine and glycerin.

*Home treatment:* Rinse mouth with 50% solution of peroxid of hydrogen three or four times a day.

II. Spray mouth with a solution of sodium perborate; apply 10% solution of trichloroacetic acid.

*Home treatment:* Sodium perborate, one teaspoonful to one-half glass of water four times a day.

III. Spray mouth with a 50% solution of peroxid of hydrogen. Dry area and paint with:

Zinc Iodid	20 parts
Tincture of iodine	20 "
Dist. water	10 "
Glycerin	50 "

*Home treatment:* Sodium perborate, one-half teaspoonful to one-half glass of water.

IV. Dry tissues; apply sodium perborate, followed by bicarbonate of soda.

*Home treatment:* Sodium bicarbonate applied dry three or four times a day.

V. Flush mouth with sodium perborate, one teaspoonful to three teaspoonfuls of water. Paint gums with a 2% solution of mercurochrome.

*Home treatment:* One teaspoonful of sodium perborate to four ounces of water every hour.

VI. Spray mouth with a solution of bicarbonate of soda; dry parts and paint with a 2% solution of gentian violet and acriflavine, equal parts. Make application daily.

*Home treatment:* One-half teaspoonful of bicarbonate of soda in one-half glass of water three or four times daily.

VII. Spray mouth with peroxid of hydrogen solution, one to three. Apply 8% solution of zinc chlorid in distilled water on cotton with wooden applicator; cover with cotton, and in ten minutes follow with a 10% solution of chromic acid in distilled water. Repeat on the second, fourth and seventh days.

*Home treatment:* Make a fresh solution each time of:

1 scant teaspoonful of powdered borax  
A scant  $\frac{1}{4}$  teaspoonful of salt  
One teaspoonful of hydrogen peroxid

Use three or four times a day.

There are many more suggested treatments, all based upon similar principles.

Now I shall outline the treatment with which I have been most successful. From experience I have found that, while radical treatment with such strong escharotics as nitrate of silver, zinc chlorid and chromic acid are capable of destroying the organisms, at the same time they destroy the tissues, are painful to the patient and sometimes cause considerable slough. They accomplish their end by destroying the organism, but sometimes do more harm than good.

I first prescribe a good cathartic and place the patient on a diet, as outlined in this article. I remove all surface

debris from the tissues. Next the mouth is thoroughly sprayed with a solution of peroxid of hydrogen, one part of water to three parts of peroxid. I follow this with the ultra-violet ray. The mouth is rayed the first day for ten minutes. This is gradually increased by two minutes each day until twenty minutes is reached. After that the parts are dried and pieces of cotton saturated with a solution of 5% salvarsan glucose are held in the mouth for ten minutes.

For home treatment I have the patient use, three times a day, a solution of:

Peroxid of hydrogen	10 ounces
Wine of ipecac	6 drams
Glycerin	10 "
Fowler's sol.	10 "
Aqua purae qs.	16 ounces

Occasionally you may find a very stubborn case. A blood test should then be made and, even though this is negative, three or four salvarsan injections intravenously may yield remarkable results.

I find my treatment very soothing and in most cases get very quick results. The ultra-violet rays are no doubt very efficacious, for they are analgesic

and bactericidal. It is a conceded fact and has been demonstrated by authorities that the ray will destroy bacteria in from six to twenty-five seconds. The ray is also abiotic, biologic, produces fat soluble Vitamin A, causes calcium, iron, phosphorus and iron fixation, increases hemoglobin, has oxygen-carrying capacity, and oxidizes and destroys toxin.

In all cases of Vincent's extreme care must be taken to sterilize the hands, instruments and chair tray thoroughly, as this disease is very infectious.

In checking up the histories of patients I find that nearly all of them are anemic, and most of them have lowered vitality—some from excessive dieting. It is a disease that respects neither age nor station. I find that all of these people frequent the soda-water stands in drug stores and candy shops. I made a personal tour of a number of such places and was amazed to see the unsanitary methods adopted by some of them with their drinking glasses and cups. It was easy to see how almost any infectious disease could be transmitted by the careless way in which these articles were washed.

124 West 73rd Street



## Efficient Ultra-Violet

### THE ULTRA-MODERN DENTISTRY

A few suggestions regarding *Efficiency of Ultra-Violet Light*, by Thomas B. Hartzell, M.D., D.M.D., published in the January 1930 issue of *The Journal of the American Dental Association*.

By A. L. PARSONS, D.D.S., Cleveland, Ohio

About seven years ago the writer was very fortunate in having as a patient a man high up in the electrical world. At every visit of this patient to the office our conversation was mainly along the lines of heliotherapy. This man gave me a great deal of valuable information on the subject, and upon his advice I had the local representative of a large company manufacturing a very high-grade quartz mercury lamp call upon me to get what information I could. His talk was very vague and extremely mythical and certainly nothing to induce a person to buy such a lamp for use in dentistry. He could give practically no information to help in the dental application, but, after weighing his talk and the information I was able to get from my patient, I decided to risk the gamble. I was very fortunate in having my brother associated with me, and between us we started to negotiate the unknown field of dental heliotherapy.

As with Dr. Hartzell, according to his article in *The Journal of The American Dental Association*, we tried the technic advised by Dr. Sampson, as advocated in his book entitled *Physiotherapy Technic*, although we traveled very cautiously in this heroic treatment. However, like Dr. Hartzell, we soon found that no patient would submit to a second treatment after suffering one

experience. As for frying the patient, it was far better to realize that we were dealing with a human being and not with steaks.

We were left holding the bag, and an expensive bag at that, with a fine apparatus on our hands to look at and with apparently no known method of application that the patients would accept. What were we to do?

For some years Monday had been our day for recreation, so we decided to forego our pleasures during our first winter with the light and devote our Mondays to trying to work out some acceptable working plan of technic. We devised the idea of a free clinic, and, consulting some of our brother professional men for assistance in securing subjects and receiving absolutely no encouragement from that source, we consulted the heads of several charitable institutions and there received the encouragement we wanted. It was not long before we had all kinds and conditions of cases coming in for treatment. This clinic was run for eight months, and upon the knowledge and experience gained in this way we have based our present technic, which we have found to be very gratifying.

Unlike Dr. Hartzell, we have found that ultra-violet is a very powerful sterilizing and bactericidal agent and produces a very high degree of hyper-

emia. Fever is nature's own defense against infection, but the mighty Nimrods do not go hunting with a pop-gun. They use more effective measures to get their prey. It is not fair nor scientific for any one to condemn ultra-violet unless he is properly equipped with both appliance and complete working knowledge of its application.

Dr. Hartzell's first grief came, as he states, with a lamp with which he failed to produce any reaction in five or ten minutes. He claims to have purchased this lamp for \$35.00, and that the dealer was glad to dispose of it at any price. Now, just why did he purchase a lamp with such a backing, and how would he expect to get the high-grade results with an appliance that failed to produce the expected reaction on the arm in five or ten minutes when five or six seconds should be sufficient if applied at a point protected by the coat sleeve? The suture material he mentions may not have been transparent to the ray, in which case how could he expect a penetration of the ultra-violet wave to sterilize?

Another of Dr. Hartzell's griefs came in the application of the ray to the infected tooth surfaces and gums and in the failure to destroy all of the bacteria in the mouth. We are not concerned with the destruction of all of the bacteria in the mouth, as he certainly must know that bacteria are necessary to our well-being, so why destroy all of them? Millions of bacteria may be hiding around the teeth or floating with the particles of debris or under the salts and air-bubbles and the oily substance so often found floating in the saliva, all of which would

protect the bacteria from the ray. We are not concerned with the bacteria found floating in the mouth, as they are harmless. So why try to catch all of the fish in the sea? They will do us no good after the supply is gone and would only tend to make us starve to death if our only diet were fish.

We are concerned only when the bacteria leave their dormant state and enter the tissues and become active, producing infection. Infection means two things: (1) "the unnatural entrance into the body tissues of pathogenic bacteria, capable of infecting," and (2) "the unnatural lowering of the normal resistance, which allows the invading bacteria to become established."\*

A large part of bacteria is made up of protein, together with the amino-acids, phenylalanin and tyrosin, both of which are sensitive to ultra-violet radiation and are destroyed either by the direct action of the ray through coagulation or by the phagocytic action of the blood. Health tissue cells also contain amino-acids, but not the kind sensitive to ultra-violet, and, while the bacteria are destroyed, the tissue cells are stimulated and become more resistant.

The ultra-violet wave, being a powerful stimulant, expands the capillaries which have been contracted by the inflammation, allowing a free passage for the blood. As the pain occasioned by the inflammation is caused by the blood-pressure behind the contracted capillaries, this pain is relieved as soon as the expansion of the capillaries takes place, as all of the pressure is removed.

\* Luckiesh & Pacini, *Light and Health*.



At no point in Dr. Hartzell's article does he mention the use of a photosensitizing stain, which allows a deeper penetration. There again he appears to be lacking in technic. Then, again, I think his free use of iodine is rather faulty, as he will not get the desired reaction through a coating of iodine. He has not mentioned the use of a sensitizer pumped up into the canal of the infected tooth. This stain will carry the ray to the end of the crooked roots when the applicator is placed in the cavity and pointed up into the canal.

His application in bleeding sockets also might be improved upon, as the ray is entirely absorbed by the hemoglobin. As the blood is flowing from the socket and at the same time absorbing the ray, it is immediately discharged

by the constant flow and consequently the effect never reaches the tissues. I am sure that by placing the applicator against the gum, free of all blood, and by the use of a sensitizer he will get the desired result, provided that his appliance is of an effective make.

Dr. Hartzell's applicators costing twenty dollars and forty dollars apiece are like silver bullets placed in an expensive gun. The first thing to do is to learn to shoot the gun. If the aim is poor, do not blame the silver bullets or the gun.

To produce the required results, two things are necessary: (1) a perfect means of producing ultra-violet waves; (2) sufficient knowledge of the technic to produce the required results.

834 Rose Building

## An Odd "Coin"

This "coin" was picked up on the main street of Brantford, Ontario, and turned over to Dr. C. T. Moyle, who

as a "token" during the years of the Civil War. Perhaps some of our readers have similar "coins" or know some-



kindly forwarded it to us. He wonders whether the coin was used as an advertisement in 1863 or whether it was used

thing about their history. We shall be glad to hear from them.

## Mouth Hygiene

A Fifteen-Minute Radio Talk Under the Auspices of the Oral Hygiene Committee of Greater New York

By KANNON SHEINMAN, D.D.S., New York, N. Y.

The Oral Hygiene Committee of Greater New York, composed of delegates from all the dental societies, represents the dental profession of the entire city. The function of this committee is to spread the knowledge of mouth hygiene to the public and to cooperate with other civic educational health agencies in advancing the plea for clean mouths and sound teeth as important factors in the preservation of health and the prevention of disease. The committee is also endeavoring to aid the municipal health and school authorities in executing the excellent plan of having every school child make a visit to the dentist regularly every six months, in order to demonstrate practically the advantage of prevention over cure.

Oral or mouth hygiene, which can be defined as the maintenance of a clean and healthy mouth by the proper care of the teeth, gums, tongue and other tissues of the oral cavity, is the altruistic contribution of dentistry to humanity, for just in proportion as the public accepts the benefits of its practice will the more expensive work of the dentist decrease. Since the main work of oral hygiene is prophylaxis, that is, the cleaning of teeth and adjacent structures, the dentist who preaches and practices it prevents decay and thereby reduces his own income by obviating the necessity for fillings, crowns, pyorrhea treatments, etc.

At present patients undervalue this altruism on the part of dentists, just as they undervalue the unselfish advice of physicians which would prevent disease. But in dentistry, as in medicine, prophylaxis has come to stay. Health service can be divided into three distinct phases or procedures: the diagnosis, the cure and the prevention of disease. It is not difficult to understand how the importance of the first diminishes with the growing knowledge and practice of the third. When the public learns the true value of oral hygiene, decay of the teeth and diseases of the gums will be largely eradicated and in that way systemic disease will be greatly reduced, for we now know beyond a shadow of doubt that many bodily ailments are directly or indirectly attributable to diseased teeth and their investing structures, and today every trustworthy dentist and physician is striving to avoid these ailments by directing attention to their causes.

The mouth is the portal of entry to the human system. It is the gateway to health as well as to most of the diseases to which the human body is heir. Mouth hygiene does and with increasing knowledge will contribute more to disease prevention than any other single health measure. The creed of mouth hygiene is that cleanliness is the salvation of the teeth and gums, and that healthy gums and sound teeth mean a better physical condition generally.

Statistics show that seventy-five men, women and children die every hour in the United States from diseases that might be prevented, and it is now known that many of the preventable diseases have their origin in an unhygienic condition of the mouth.

The mouth of the average individual harbors almost all the time a great variety of disease-producing germs. Three conditions are necessary for the virility and multiplication of these germs in such numbers as to make them capable of producing the disease or infection characteristic of that particular type of germ which is the first to attain this numerical strength and virility. These three conditions are moisture, body temperature and proper food supply. With any one of these conditions absent, the germs remain in a weakened condition, incapable of multiplying, and are quite harmless. We cannot eliminate from the mouth the temperature and moisture in which it is ideal for disease-producing germs to prosper, but we can and should eliminate the proper food supply and thus render, as I have said before, these germs quite harmless even in the presence of weakened natural body resistance. This can be accomplished and made feasible through the medium of mouth hygiene, which consists of the following measures or steps applicable to both child and adult, and which my limited time permits me to describe but very briefly:

1. Correct diet, consisting of foods that contain the proper and required amount of mineral salts and vitamins that the teeth and their surrounding structures need. Examples of such food are milk and other dairy products,

green leafy vegetables, fresh fruits and cereals made from whole grain. The absence or insufficient quantity of these foods subject the teeth to starvation and hence they are more liable to disease.

2. The teeth should be given proper exercise in the process of mastication by being subjected to the use of coarse, hard foods such as dry toast, crusts of bread, zwieback, etc. Thorough mastication is necessary, (1) because satisfactory nourishment of the body, including the teeth and their supporting tissues, depends on the proper digestion of food, and digestion of food is promoted when the food has been thoroughly masticated, and (2) because exercise of the teeth and their supporting structures is essential to their health and development. The best way to exercise the teeth is to use them.

3. The dentist should examine the teeth and adjacent structures at least every six months. Every person should have a complete x-ray examination of the teeth early in life. When there is considerable decay or when there is much dentistry, this x-ray examination should be repeated at least two years. The complete survey should take in not only all the teeth but the spaces where teeth are missing as well. An x-ray survey of the mouth can be had at a nominal cost and is an investment in good health. It helps the dentist in many ways to safeguard the teeth and health. It shows him whether there is infection about the mouth, whether the baby teeth have been retained too long, and whether their retention has prevented the permanent teeth from coming through. It shows him whether any other abnormality exists or will develop

within a few years. In short, the x-ray is a third eye, without which a satisfactory examination is incomplete, and it constitutes an examination that every intelligent person should undergo regularly.

All cavities of decay in teeth, fissures and defects must be treated and filled at once. Shallow cavities are usually less sensitive and therefore can be filled with greater ease and simplicity.

4. The dentist should give the teeth a thorough cleansing, that is, a prophylactic treatment, at regular intervals, say, at least twice a year, and each individual must be instructed in the proper use of the toothbrush and other existing methods of cleansing. The health of both teeth and gums depends upon a vigorous blood supply. The toothbrush is the simplest and most effective means for stimulating the blood supply to both. When effectively used, the toothbrush will increase the resistance of the gums against infection, while at the same time it helps to protect the teeth against decay by its cleansing action. An unclean mouth contains

decomposing food in which bacteria are constantly growing and multiplying.

5. It is best to extract all hopelessly diseased teeth to prevent the possibility of injury to the general health. The resultant spaces can be taken care of by artificial tooth replacement. A missing tooth has the same detrimental effect on the mechanism of mastication as a missing cog in a set of gears.

6. Whenever possible, malarrangement and irregularity of the teeth are to be corrected. Irregular teeth cannot function properly. They are difficult to keep clean, liable to disease and often ugly in appearance.

My time is almost up now and I realize that I have touched only a few of the high spots of this increasingly important subject, but I hope that I have awakened the interest of some of my listeners to the knowledge that most diseases of the teeth and gums can be entirely prevented if intelligent care is begun soon enough and is persisted in throughout life, and that a neglected, unclean and unhealthy mouth precludes the possibility of a healthy individual.

355 East 149th Street

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## Louis J. Weinstein

As we go to press it is with great regret that we learn of the death of Louis J. Weinstein, of New York, widely known as a metallurgist. He did valuable work in cooperation with

the Bureau of Standards and rendered a distinct service to dentistry. He had been appointed professor of metallurgy at Northwestern University. His loss will be greatly felt and his place difficult to fill.

## The Dental Consultant

By J. CAMPBELL THOMPSON, D.M.D., Boston, Mass.

The dental consultant, while one of the newest in the field of specialists, is, nevertheless, one whose need has long been most obvious. His function may be likened to that of the architect, who, while he does not erect the building himself, must have such a working knowledge of all the factors that enter into the structure, *i. e.*, the need or use it is to fulfill, the location and type best suited, the size and strength required, the materials best adapted, the types of workmen needed, that he, so far from having to justify his existence, has become such a recognized factor in the results consistently attained that no sane individual or corporation would attempt to do without his services.

Just so with the dental consultant. Obviously he must be a man who has had wide and varied experience in the general practice of dentistry, and he must be without bias or prejudice in relation to its various components. He must understand diagnosis and be able to correlate probable causes and effects as between physical conditions and their associated dental factors.

The dental consultant must be able to survey the field so intelligently that he can advise the patient how far to go and when to stop, which is not always an easy thing to do. He must be able to design, or cause to be designed, restorations for patients that will be a source of satisfaction and utility for many years, and he must see to it that the work for the patient

whom he is advising and assisting only in the capacity of adviser shall be completed in a manner entirely satisfactory and adequate for the patient. He advises as to the particular plan to be adopted, the length of time to be spent, the cost to the patient, the probable upkeep or ultimate repair, the responsibility in case of breakage, etc.

Thus it is apparent that the dental consultant is a sort of clearing house or man of affairs to whom physicians especially may refer their suspected border-line cases, and from whom, without stint or limit, consultation and consideration may be obtained, and in whose mind the best interests of the patient are the only factors considered.

No less should the general practitioner of dentistry welcome such a man. Dentistry has become so complicated that the busy general practitioner cannot be expected to be able to manage, unaided, the many complications that arise. He should have recourse to some clearing house of information, some moral support as to his fees, which at times are questioned; his type of service, his limitations of responsibility and the like, without embarrassment on his part and at a negligible expense.

The implication of all this is large and varied. It is obvious that extensive x-ray work must be done, and that blood tests, urinalysis and physical examination by an internist may be required. Interpretation and cooperation on the part of several specialists in vari-



ous lines may be, and frequently are, required. With all of this the dental consultant is entirely familiar.

This newest of dental specialists makes his bow before you. Time and experience alone can prove his usefulness. But, granted the right sort of experienced and conscientious practitioner and the necessary cooperation of his medical and dental confrères, together with the patient's confidence, his place will ever be filled with new recruits as the need for them increases.

From now on, think in terms of dental consultation. Try to have estab-

lished in your community the type of consultant who is capable of assisting you in your daily cares and worries. Then cooperate with him. Have him cooperate with such of your patients as may require the exceptional service.

It is astonishing to see the number of cases that occur in the course of a week in which dentistry, your dentistry, has failed to meet the fullest requirements attainable, the accomplishment of which would be of everlasting credit and satisfaction to both the dentist and the patient.

39 Bay State Road.



[METABOLISM]

*Chemistry is so deeply involved in life phenomena as to become of necessity a partner with medicine and dentistry in their efforts to preserve life. Life itself is a chemical function. The body is made up of innumerable cells, each one a miniature chemical factory, carrying out its allotted task and making its own contribution to the substance and function of the body as a whole. By reason of this physiologic division of labor each cell contributes that special activity which is essential to the association of chemical processes that constitute the living individual. The energy of the body is all derived from the chemical energy of the food; and the sum of the chemical changes involved, whether they lead to molecular simplification, as in combustion, or to complexity, as in the manufacture of tissue capable of carrying on vital function, is known as metabolism.*

—MILLER.

## The History of Dentistry\*

By IRVING S. DONZIGER, New York, N. Y.

School of Dental and Oral Surgery, Columbia University '30

Dentistry is quite an ancient art. It was first practiced by the priests as a sort of semi-religious rite. Later, when the laity became interested, dental surgery, chiefly extractions, was practiced by barbers and traveling charlatans, who resorted to music and various other forms of entertainment to attract the people. It was not until the beginning of the sixteenth century that dentistry began to rise to the dignity of a profession, and not until the latter half of the nineteenth century that the real scientific progress began. It is, however, the last twenty years that have witnessed the greatest progress.

The Chinese, being recognized as having an ancient civilization, probably practiced some forms of dentistry. Old Chinese medical works describe nine different types of toothache and seven distinct maladies of the gums. These were cured by puncturing, often in distant parts of the body. All together the Chinese doctors had twenty-six sites of puncture for the relief of toothache.

In the Greek civilization Hippocrates stands out as a practitioner of both medicine and dentistry. He treated loose teeth by ligating them together, much in the same fashion as it is done today. The Etruscans (early Italians) in 1000—200 B. C. must have been artists in bridgework, for some of their specimens recently unearthed might with a little polishing readily be mistaken for

bridges of modern construction. They consist of a series of gold rings skillfully welded together with ox teeth used as dummies. Another specimen is a hollow gold crown, shaped like a lower incisor and fastened to gold clasps, which fitted over the adjoining teeth and held it in place. Dental forceps of this time were made of lead and resembled those in use today.

Archigenes, living in the first century, surmised that toothache was the result of diseases of the interior of the tooth and treated it by drilling into the pulp chamber.

Teeth with inlays of jade, rock-crystal and gold have been found in skulls dug up in South America and prove that the aborigines there practiced dentistry of a high order. Among primitive peoples of today some queer customs still exist in regard to teeth. In Japan married women dye their teeth black, in Sumatra the women file their teeth into points, and in New South Wales it is the custom for a young man to have his front teeth knocked out with a stone as a sign of his having reached the age of virility.

During the Middle Ages dentistry was practiced by the Arabs. Abualcasis, an Arab physician, invented fourteen kinds of scrapers for the removal of tartar from the teeth. For extraction purposes he used two forceps, one to loosen the tooth and the other to remove it. If the tooth broke, he used elevators. It is interesting to note that

\* Submitted in Theory and Practice.

the first recorded death due to the extraction of a tooth occurred in 1045. At this time many noted physicians subscribed to the idea that cavities and toothache were caused by worms in the teeth, and many devised various methods of driving these worms out. Another popular superstition that existed even as late as the sixteenth century was that the fat of green frogs, when applied to the teeth, caused them to fall out. It is worthy of mention here that in the fourteenth century general anesthesia was practiced by applying to the nostrils a sponge soaked in various preparations, including opium. This must have been quite effective, for it is related that major operations were performed through its use.

In 1308 the barbers of London incorporated into a "guild," and the name of *barber-surgeon* was used to denote a practitioner in all the branches of surgery. In 1450 Giovanni d'Arcole wrote, for the first time, of the use of gold-leaf for filling carious teeth. In the sixteenth and seventeenth centuries considerable progress was made. Research in anatomy brought out the relationship of the permanent to the temporary teeth. The alveoli, periodontal membrane and pulp chamber came in for their share of attention, and one man stated that the pulp chamber and canals contained blood-vessels and nerves and not marrow, as had previously been claimed.

In 1593 it was rumored that a golden tooth had erupted in the mouth of a Silesian boy in Germany, and many prominent people went to see the phenomenon. Many articles were written to explain this occurrence, and the fact was given great credence until the

fraud was accidentally exposed. Some jeweler had made a gold crown and inserted it deep into the gums. A fee was charged for seeing the tooth.

The seventeenth century as a whole produced many things worthy of mention. In 1651 Nathaniel Highmore published a treatise on anatomy and was the first to describe the antrum. Surgeons began to awaken to the fact that teeth might be the cause of other than merely local symptoms. A case of *tic douloureux* was cleared up by William Fabry by the extraction of four carious teeth. A girl whose nose had been cut off was given a new one by a surgeon of the University of Bologna. This is the first case of its kind on record. The latter half of the seventeenth century saw the introduction of mineral teeth, made by fusing together white wax and gum and adding ground mastic, powdered white coral and pearls. Events of more or less minor importance occurred from that time until the time of Fauchard, who was the founder of modern dentistry. In 1728 he published a treatise on dentistry which included all the knowledge then available on all branches of the science. He advised the founding of a school where dental and oral surgery could be properly taught. His book included also a list of the different operations that could be performed on teeth, his only error being his belief that teeth could be transplanted successfully. Fauchard set at rest the idea that worms caused toothache, which had been popular throughout the preceding centuries. He was the first to advise that the patient be seated comfortably in an easy chair instead of on the floor, which was then the common

practice. He also related a case of orthodontia in which a tooth was straightened by him, the operation taking about ten minutes.

The second edition of Fauchard's works, which appeared in 1746, was the first to mention pyorrhea. He made mention also of a machine for drilling into teeth, which marked the beginning of the dental engine.

In the last year of the eighteenth century many improvements were made in the manufacture of porcelain teeth, the man most responsible for the first good formula being Dubios de Chemant. They were introduced in America by Plantou in 1817, where they were subsequently improved by such men as S. S. White and H. D. Justi.

While these improvements in the character of mineral teeth were taking place, similar advances were being made in other branches of dentistry, mainly operative dentistry and anesthesia. Important improvements in the method of filling teeth started in the latter half of the eighteenth century, but it was not until the early part of the nineteenth century that the filling of teeth came into general practice. Gold-foil was first seen in this country in 1815, though as early as 1728 Fauchard tried to use it, but found it unsatisfactory, preferring tin instead. The first dental gold used was the gold-leaf made by gold-beaters. This proved too thin, however, and was soon replaced by rolled gold made from the Brazilian Johannes, then the purest gold coin obtainable. In 1812 Marcus Bull entered into the business of manufacturing gold for dental use, using pure gold, which he found much superior to the coin gold then in common use. Cohesive

gold-foil was not perfected until 1855, by Arthur of Baltimore. This discovery made possible the contoured filling. Both platinum- and silver-foil have been used as filling materials at various times, but apparently with little success. Tin became quite popular at one time, but was finally displaced by amalgam.

Amalgam, now probably the most widely used of all filling materials, has an interesting beginning. A Mr. Pepys of London introduced a fusible metal in 1805. This was quite successful, the only objection being the heat required to fuse it. To overcome this, Regnart, a French chemist, advised the addition of one-tenth its weight of mercury. In 1837 J. L. Murphy of London described an amalgam of silver and mercury. About 1833 the Crawcour Brothers came to New York and began filling teeth with amalgam under the shining title of Royal Mineral Succedanaum. They were quacks of the first order and for a while made money rapidly while the best dentists sat idle. In spite of this, amalgam came to be adopted by many practitioners, though it was in disfavor with the better class of men. This fact caused a real rift in the profession and resulted in the disruption of the American Society of Dental Surgery. Finally, in 1855, Townsend gave the profession his formula of four parts of silver and five parts of tin. Until then amalgam had been made by filing old Spanish coins and mixing them with mercury. Minor improvements were made from then on until 1895, when Black laid the foundation for a balanced alloy. Since then the Bureau of Standards and the various manufacturing concerns have stead-

ily improved on the original product, but the basic formula still stands.

The other less used filling materials, such as copper amalgam, zinc oxychlorids and oxyphosphates, and gutta percha for temporary fillings, all had their beginnings in the latter half of the nineteenth century. Silicates were introduced at various times, but have been perfected and widely used only in the last ten years.

The inlay, now widely used as a dental restoration, has been the subject of discussion since 1858. Porcelain inlays were used for a long time before gold inlays came into general use. Pieces of artificial teeth were ground to fit a prepared cavity and cemented into place. This form finally developed into the modern type of porcelain inlay.

The gold inlay was not used extensively until 1907, when Taggart introduced the modern disappearing mould technic. He patented his process, suing all who used it without his permission for infringement, but he was, however, defeated in the courts.

The dental pulp did not come in for much attention until 1800, when various drugs began to be used for alleviating the pain caused by exposed pulps. Root-filling came into general practice about 1845, and gold amalgam and even wooden points were used. The practice of knocking out pulps with wooden points and then using the same point as a filling was in common use in the nineteenth century. The first real improvements started in 1901, when Price advocated the use of the x-ray in root-canal work and showed by a series of radiograms the effects of imperfect fillings.

Before the time of Black the prepa-

ration of teeth for filling consisted in removing the superficial caries. It was not until 1891, when Black started to publish his articles on cavity preparation, that this phase of operative dentistry was placed on a scientific basis. He first studied the physical properties of enamel and dentin and advocated the principle of "extension for prevention." His theories were so sound that they are still the most widely used in cavity preparation.

Cutting and drilling instruments did not come in for much attention until the nineteenth century. The first drill used was the bow-drill of jewelers, which was used by Flagg of Boston in the latter part of the eighteenth century. From then on various types of hand-drills were used until 1858, when Charles Merry introduced the first "flexible cable." A motor-driven engine actuated by clockwork was invented in 1864. The invention of the foot engine in 1870 by Morrison was the forerunner of the modern type. The introduction of the electric motor marked a decisive step in the improvement of the dental machine.

All in all, it was the nineteenth century that marked the greatest advancement in operative dentistry. The development of the engine, new cutting instruments especially designed and manufactured, the scientific principles of cavity preparation, the use of gold both in inlay and foil form, the development of amalgam, and a better understanding of the anatomy and histology of the teeth and the causes of caries, all combined to place operative dentistry on its present high plane.

Developments in modern crowns and bridges began about 1850, though



bridgework using wire and clasps dates back to ancient times. The ordinary shell crown was first introduced by Beers in 1871 and was followed by the Richmond in 1880 and the Land porcelain jacket shortly afterward. At about this time also interchangeable facings made their appearance. In 1886 Alexander introduced the telescoping crown as an anchorage for removable dentures, and in 1906 Pennington brought the inlay as an abutment into general use.

In 1910 Hunter of London delivered his famous address entitled *The Rôle of Sepsis and Antisepsis in Medicine*, in which he severely criticized the entire system of crown and bridgework as then practiced in America. As a result, much of what was formerly considered good practice in bridgework was discarded and the dental profession was thoroughly awakened to its responsibilities. Following this, various types of removable bridgework gained favor, prominent among them being that introduced by Nesbitt in 1915.

In the fields of oral surgery and orthodontia progress ran parallel to that made in the other branches of dentistry, with the nineteenth century, especially the latter half of it, witnessing the most notable advancement. The development of local and general anesthesia and the roentgen ray were the most notable contributions to dental surgery in that time. Research in the fields of physiology and embryology completely

revolutionized the practice of orthodontia. In 1876 J. N. Farrar published a series of papers in which he stated that movements of the teeth were accompanied by physiological changes in the bone when kept within certain limits. Edward H. Angle started the present-day science of orthodontia by a series of papers in 1887. He was the first to advocate the correction of malocclusion, which before that had been neglected as long as the teeth had a regular appearance.

The nineteenth century also noted the greatest advance in dental education. This is best summed up by the change in the attitude of medical men toward dentistry. When, in 1825, several prominent men made an attempt to establish a dental department in connection with the University of Maryland, they were informed by the medical faculty that "dentistry was of little consequence, and, the University being already overtaxed, such action could not be taken." However, in 1840 the Baltimore College of Dental Surgery was granted a charter and graduated its first class of two students in 1841. Many similar institutions soon followed, most of them as independent colleges. Some did not prosper, but, now that the ball had started rolling, a general movement occurred and dentistry soon came to take its present high place among the older professions.

630 West 168th Street.



## In the Supreme Court of Alberta Appellate Division

ALBERTA DENTAL ASSOCIATION

vs.

SHARP

### *Judgment of The Honourable The Chief Justice.*

By Section 31 of "The Dental Association Act," (Chapter 204, R.S.A., 1922), provision is made for investigation of cases of charged or reported unbecoming or unprofessional conduct on the part of a licensed dentist, by a committee, and if the charge is considered by the committee to be proved, for a reference of the matter to a District Court Judge, who, if he finds the licensee guilty, may suspend or cancel the license and make such order as to costs as he deems meet.

The Respondent is a licensed dentist, and complaints have been made about some of his advertising. His attention was called to it, and the objections pointed out. Having failed to change his methods, proceedings were taken under Section 31.

The learned District Court Judge who heard the case found him guilty of unprofessional conduct in respect of three of the advertisements in question to which objection was taken, and ordered him to pay the costs, but neither suspended nor cancelled his license. In respect of the other advertisements in evidence, he expressed the opinion that they were unobjectionable on professional grounds, and the Formal Order so declares.

The Association has appealed from the Judgment in so far as it declares the advertising in question unobjectionable, and also in its not adjudging a cancellation or suspension of license, and the Respondent has appealed as to the remainder of the judgment.

One of the advertisements held objectionable was contained in the Edmonton Telephone Directory, which, after the name, "Dr. J. C. Sharp, Dentist," adds: "Specializing in Crown and Bridge Work and Dental Plates. Have you seen my Hecolite Plates?"

By amendment to the Act in 1927, Chapter 47, Section 2, it is provided that:

"No person shall advertise or hold himself out to the public as a specialist, or as being specially qualified in any particular branch of dentistry or dental work, without having received from the Registrar of the University of Alberta a certificate of having complied with such conditions precedent as to qualification or fitness as may be prescribed by the Senate of the said University."

The section further provides that any breach of it shall be deemed to be unbecoming and improper conduct within the meaning of Section 31.

It is contended that to say that he specializes in a certain branch of work is a quite different thing from saying he is a specialist or has special qualifications in respect to it. But, even if that be so, the ordinary reader would likely take it as indicating that he had spe-

cial qualification, and so, if it did not mean that, it would be misleading and might therefore be properly considered as something unbecoming a professional man, and upon the evidence it was properly held to be unbecoming.

Of the other advertisements, two or three are only ordinary professional cards, and no objection is taken to them, but all the others contain much more, all of them containing prices for different classes of work, many of them containing as well illustrations of teeth, and some of them comparing prices asked with those charged elsewhere. There is no doubt that they are very undignified, and three practicing and experienced dentists have stated that they consider them unbecoming and unprofessional. These witnesses all state that they are members of the Dominion Dental Association, and that such advertisements are forbidden by it, and it is urged that their evidence does not go beyond what would be becoming conduct for members of that Association.

But their evidence is not so limited, for they state that such advertising is unbecoming a member of the Dental Profession. There is no real evidence to the contrary.

It is shown that similar advertisements appear in United States journals. That, of course, does not even show that they are considered unobjectionable when they do appear, any more than the production of the advertisements in question here would show that such advertisements are unobjectionable here, even if the standard in any other jurisdiction could be taken as a proper guide for a standard here.

The only other evidence for the

defence was that of the Counsel who appeared for the Respondent before the Trial Judge, and who gave evidence that, from his experience as a barrister and King's Counsel of many years' standing, he did not consider the advertisements objectionable as being likely to mislead. It is apparent that that evidence is of little, if any, more value than the other, as the witness showed no qualification whatever for forming an opinion as to what should be deemed to be becoming conduct in a member of the dental profession, and indeed declined to express any opinion.

From 1912 until 1926, the Dental Profession Act contained the following provision (Section 28 of the Revised Statutes):

"No member of the Association shall publish, use or issue any advertisement, card, handbill, poster or sign, calling attention to any particular style or mode of work, or stating fees for materials or services."

There can be no doubt that, while that Section was part of the Statute, the use of these advertisements to which objection is taken, being in direct violation of its provisions, should be considered unprofessional conduct and would moreover have subjected the user to the penalty of a fine of not less than \$50.00.

The repeal of the Section in 1926 would free the user from the risk of the monetary penalty, and it is urged that it also removes such advertising from the class of acts constituting unprofessional conduct.

The Act does not lay down any rules for determining what is unprofessional conduct, not even specifying that a

breach of any of its provisions would be such, and it would seem strange if, in a profession steadily aiming at higher standards of professional ethics, such advertising, which had for years been considered improper, should at once become proper by the mere removal of a statutory prohibition. It seems much more reasonable to suppose that the purpose was simply to remove the statutory prohibition and penalty, leaving the whole question without any restriction which might seem to be inferred by the limited words of the section, as a matter of unprofessional ethics, subject to the more serious penalties for unprofessional conduct.

In *Allinson v. General Council of Medical Education, &c.*, 1894, L.Q.B., 750, a case relating to the medical profession, it was held that if it is shown that a medical man has done something which would reasonably be regarded as disgraceful and dishonorable by his professional brethren of good repute and competency, it is open to the Council to find that he has been guilty of infamous conduct in a professional respect.

The same rule was applied in respect of the dental profession in *Re Davidson & Royal College of Dental Surgeons of Ontario*, (1925), 57 O.L.R., 222; and was followed again in England only three months ago, in *R. v. General Medical Council*, (1930), 1, K.B., 562.

In the cases mentioned, the Council itself had power to deal with the member, and the cases came before the Courts by way of appeal from the

Council's action, which was upheld in each case.

The principle, however, is that "the opinion of his professional brethren of good repute and competency" is to be the guide for determining the propriety of the member's conduct, the Court, however, being entitled to consider the reasonableness of that opinion.

In the present case, not merely is there no ground for questioning the reasonableness of the opinion of the professional witnesses, but on the contrary, it is in complete accord with what was a statutory rule for many years.

The appeal therefore should be allowed, and Paragraph 2 of the Judge's Order struck out.

The Appellants do not ask for any substantial punishment beyond that ordered, and there need therefore be no order for suspension beyond the mere formality of it.

The Respondent should pay the costs of the appeal.

The cross-appeal should be dismissed without costs.

Edmonton, April 25, 1930.

Sgd. "HORACE HARVEY", C. J.

I CONCUR.

"J. D. HYNDMAN, J. A."

"A. H. CLARKE, J. A."

"H. W. LUNNEY, J. A."

A. BLAIR PATERSON, ESQ.,

*Counsel for the Appellant.*

L. Y. CAIRNS, ESQ.,

*Counsel for the Respondent.*

## American Dental Association Meeting

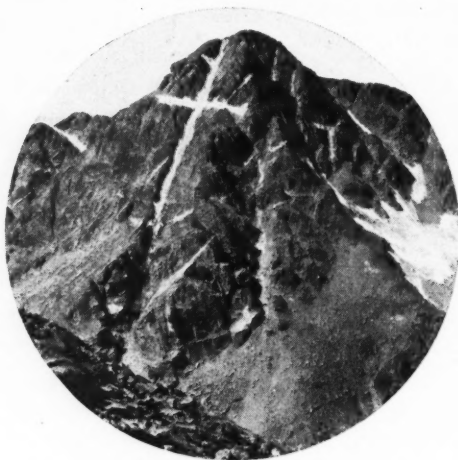
Denver, Colorado, July 21-25, 1930

### MOUNT OF THE HOLY CROSS

The Mount of the Holy Cross, one of the most celebrated scenic sights in America, awaits the delegates to the American Dental Association convention when they "Come Up to Colorado" to meet in Denver the week of July 21.

This mountain has long been noted in America. It served as the inspiration for a celebrated painting by Thomas Moran, who visited it and made sketches in 1874.

Recently it has become a point of religious pilgrimage, and a large



Mount of the Holy Cross.

This towering granite peak, rising high above timber-line, bears upon its face a great white cross, visible for many miles. This cross is formed by two seams in the mountainside at right angles to each other in which the snow lies the year around. The upright portion is 1,500 feet in length and nearly straight. The arms are 750 feet long.

number of people of all faiths band together to visit the mountain, spending a week in camp near its base to receive inspiration from the great mountains, the beautiful valleys and that amazing cross blazoned high above for all to see.

The mountain itself has an altitude of 14,170 feet, but is not difficult of access. It lies ten miles south of Red-



cliff on the Tennessee Pass Road and is in the heart of an extremely interesting section. It is only a few miles

This will be the busy season of the year, so make your hotel reservations early. For hotel and travel information,



Colorado Hotel and Swimming Pool at Glenwood Springs, Colorado.

from Leadville, one of the greatest mining camps that the world has ever seen.

write Local Committee, American Dental Association, 1222 Republic Building, Denver, Colorado.

COME UP TO COLORADO TO  
THE MILE-HIGH CON-  
VENTION!



# DIGESTS

## CONSIDERATIONS IN THE PROBLEM OF DENTAL CARIES

By RUSSELL W. BUNTING, D.D.Sc.

The author states that the accepted facts on the process of caries are that it is a destruction of the hard substances of the tooth by a process the first stage of which is a decalcification by acids, and that these acids are concentrated on certain tooth areas and not generally distributed in the saliva. Caries appears most frequently in pits and fissures where retention of foreign matter occurs, and not on smooth enamel surfaces. Acid-forming bacteria are found in all initial lesions. The hardness or softness of the teeth and the hygiene of the mouth are not the only determining factors in the rate of progress of caries. Certain constitutional states and conditions of health affect the process, and there is strong evidence that heredity is a factor. Finally, there is a racial influence, since caries is more prevalent in certain races than in others. After a bacteriological and clinical survey of several thousand cases the Michigan group is convinced that dental caries is an infectious disease, and that the specific organism is the *B. acidophilus*. This is based on the facts that in practically every lesion of dental caries bacteria were found similar to the *B. acidophilus*, that this organism is not present in mouths free

from caries, that the elimination of the *B. acidophilus* from the mouth is followed by a cessation of caries, and, finally, that by the application of cultures of *B. acidophilus* to the teeth caries is produced.

Three lines of attack are suggested: (1) the discovery of an immune principle in the saliva that is antagonistic to the growth of *B. acidophilus*; (2) the study of the relationship of diet and nutrition to the growth of *B. acidophilus*; (3) the study of the effectiveness of various measures in eliminating *B. acidophilus* from the mouth. —*Dental Cosmos*, April, 1930.

## ADAMANTINOMA

By RUDOLF KRONFELD, M.D.

"1. An adamantinoma is a soft benign epithelial tumor of the jaws. It is generally rare and is found more often in the mandible than in the maxilla.

"2. Clinically, two types of adamantinoma can be distinguished: solid and cystic. The latter is characterized by the presence of numerous cysts of varying size and shape and therefore is also called multilocular cyst or multilocular cystoma.

"3. Histologically, the solid adamantinoma must be considered as a pathologic overgrowth of tooth germ and dental lamina in an early stage of development. If it corresponds to a very

early stage of tooth development, it consists merely of numerous solid epithelial strands imbedded in connective tissue and of stroma.

"4. If the adamantinoma corresponds to a later stage of tooth development, it is characterized by the presence of stellate reticulum. The outside of the lobules is lined by cylindrical cells resembling ganoblasts.

"5. The cystic adamantinoma develops from the solid type by cystic degeneration of the stellate reticulum. As the cysts grow, they may become joined by destruction of their septums. The cysts have an epithelial lining and contain mucous liquid, sometimes colloid, and the remains of the stellate reticulum."—*The Journal of the American Dental Association*, April, 1930.

### PRESSURE ANESTHESIA

This is a symposium on the advisability of using pressure anesthesia for the removal of pulps.

E. Alan Lieban, of New York, believes that it is a dangerous procedure, due to the toxicity of the cocaine and the danger of forcing infection through the foramen. The pulp that needs removal is nearly always infected and pressures does not comply with good surgical technic. Since he does not use the method, he cannot say that pressure anesthesia causes any definite periapical disturbance.

Alfred Walker, of New York, is not convinced that pressure anesthesia is solely responsible for establishing infection in the apical areas. He prefers, however, to use conduction anesthesia.

What unfavorable results he has obtained with pressure he blames on the technic rather than the method. Powerful germicides may be used, and, since the pressure is so slight, there is little danger of introducing infection.

Carl D. Lucas, of Los Angeles, sees no contra-indication to pressure anesthesia in the following instances: (1) accidental exposure during cavity preparation, when the cavity extends only slightly into the dentin and there has been no previous pulpitis; (2) in a case where a tooth has been fractured and there has been no previous pulpitis.

Pressure anesthesia is contra-indicated when the pulp is exposed by caries, when the tooth has suffered from pulpitis, when pulp nodules are present, when there is pericementitis, for the removal of a pulp that has been partially removed with devitalizing paste. He further states that he is not at all in favor of pulp removal.

U. G. Rickert, of Ann Arbor, reports unfavorably on the method and claims that it sets up persistent pericemental inflammation, demonstrating the fact that the anesthetic is carried rapidly beyond the root-end.

J. R. Blaney, of Chicago, believes that pressure anesthesia should be used only when there is a valid reason for not using local anesthesia, or when, after a number of attempts, local anesthesia does not give the desired results.

Hermann Prinz, of Philadelphia, claims that pressure anesthesia will not cause infection, and that it will not force bacteria or toxin into the periapical area.—*Dental Items of Interest*, April, 1930.

## Foreign Dental Literature

Edited by JOHN JACOB POSNER, LL.B., D.D.S., New York, N. Y.

### RELATION BETWEEN RETAINED TEETH AND TUMORS OF THE JAWS

By L. M. LINDENBAUM, Vienna

As a rule the writings on tumors in the mouth closely related to the dental system are on granulomata, cysts, epulis, etc. Little description has been given to the part which the tooth plays in the origin of the tumor.

Magitot has said that many new growths can be traced to the alveolus of a wisdom tooth. The possibility of a growth has also been shown in the neighborhood of a retained tooth. Two cases of sarcoma are reported where there was strong suspicion that retained teeth were the origin.

In fifty cases of carcinoma and sarcoma operated upon by Prof. Pichler in the past year histological examination frequently showed that there were retained teeth in the tumor or epithelial cells of dental character.

A case is reported of a boy, two years old, who had a tumor of the orbit removed and in it was embedded a temporary cuspid.

Two cases of tooth tumor are reported by Waisblatt in which there was direct connection with the tooth. One was a sarcoma of the mandible with the retention of a bicuspid, and in the other, a medullary osteoma of the mandible, a cuspid was enclosed. It can therefore be seen that growths are closely allied to retained teeth that are engulfed in the growth.

This combination of retained teeth and tumor is not accidental, as some authors are led to believe, but there is a really deep causative relationship between the two. The writer has been making careful histological study of this relationship.

In the case reported by the author the patient presented with a swelling at the chin, and the radiograph revealed an incisor and cuspid lying in the tumor. The growth and embedded teeth were carefully removed and the patient made a complete recovery.

Much division of opinion still exists as to whether unerupted teeth should be allowed to remain or should be removed. In the absence of pathology many authorities hold that the tooth may safely remain unmolested. Others, Pichler among them, believe that they should be removed as soon as possible because of the possible contribution to a growth at some future time.

The author feels that in the absence of pathology, and where the mechanical obstacles to simple removal are great, the tooth may be permitted to remain. The patient is made aware of the condition that exists and should submit to radiographic examination twice a year.

The further an unerupted tooth lies from its natural position, the greater the danger.

In all instances of tumor connected with unerupted teeth there should be careful histological examination.—*Zeitschrift für Stomatologie*, March, 1930.

OBSERVATIONS RELATIVE TO  
THE SO-CALLED FOLLICULAR  
CYST

By DR. K. BLOCH JORGENSEN, Copenhagen

In a previous article the author showed that in conjunction with cysts in the jaws of children there was always an abscessed temporary tooth. His opinion was that the cyst owed its origin to the abscessed tooth, and that the permanent tooth follicle was merely incident thereto. These cases all healed upon the removal of the temporary tooth. Since the first article the author has gathered considerable data, which serve to confirm his views.

A bacteriologic report of seven cases of follicular cyst shows six of them to have streptococcus hemolyticus, and the seventh streptococcus non-hemolyticus. The cyst wall was found to consist of granulation tissue, and there were streptococci in the cyst contents. Since both of these are found in the course of infection, the source must be the infected temporary tooth which is in direct connection with the cyst.

It is important to note that with the removal of infection and the cyst the permanent tooth follicle will eventually take its place in the dental arch. The treatment of these cases consists in the removal of the outer wall of the cyst and of all infection. The cyst cavity should be packed with iodoform gauze and renewed frequently.

It cannot be held that a follicular cyst is a simple epithelial cyst springing from the enamel organ of a tooth follicle. The weight of evidence has shown that it is inflammatory and due to a necrotic temporary tooth.—*Zeitschrift für Stomatologie*, March, 1930.

SPECIAL PATHOLOGY OF THE  
MOUTH

By HAN MORAL, Rostock, Germany

## FOREIGN BODIES

It is not infrequently that a dentist loses his hold on an instrument, a bridge or a tooth, and it drops down the patient's throat into the windpipe or pharynx. In recent years, with the great amount of root-canal work, such dangers are multiplied. Nerve broaches and tiny reamers slip from the fingers and are swallowed. A positive safeguard is the use of the rubber dam. Under nitrous oxid the throat should always be packed, to prevent a fragment of tooth or filling from slipping down the throat.

Although there are different viewpoints, the author feels that the patient should be informed when an accident of this nature occurs. One investigator saw 328 articles taken from the pharynx, of which 46 were dental objects. Out of 82 foreign bodies in the windpipe seven were dental. Another investigator cites a record of 100 similar instances of dental materials which were swallowed.

A nerve broach went down the throat of a young student and lodged in the lung. Repeated efforts to remove it failed and two years later the patient was still in good health. A less fortunate sequel followed the swallowing of a partial plate during sleep. Two years later the patient first felt the effects and died within two weeks. An autopsy showed the plate in the esophagus.

It is well to warn patients to remove bridges and partial dentures at night, not merely for hygienic reasons but to



insure against swallowing the appliance.

### NECROSIS

Necrosis in the mouth is not a disease but rather a symptom. It is not uncommon to observe necrosis in an area where an injection has previously been made. This is due at times to the accidental injection of lysol or alcohol. It frequently happens that necrosis follows the injection of novocain in a healthy patient where all due precautions were taken. The author believes this to be due to an excess of suprenin, which ties up the blood-vessels for an undue length of time and contributes to the death of the part.

Bone is peculiarly susceptible to infection and necrosis, and the mucous membrane also may become involved.

Typhus and leukemia may produce necrosis. Prolonged exposure to the roentgen rays may induce necrosis in the long bones. The same is true of radium, and in both instances the dosage is cumulative.

The most frequent source of necrosis in the mouth arises from arsenic, used for devitalization. When a tooth is involved,\* it is good practice to remove that tooth at once to prevent the spread of the necrotic process with the possible loss of considerable bone and teeth.

### DEATH DUE TO DENTAL INTERVENTION

The chief source of death at the hands of the dentist arises from operations performed under an anesthetic. Despite great care, precaution and apparent safety, changes in the heart muscle may occur and cause death.

It is particularly dangerous to subject a diabetic patient to an operation. A case is cited wherein death occurred sixteen days after the extraction of several teeth. In another instance a patient with heart and kidney condition died three and one-half months after tooth extraction. The removal of a wisdom tooth resulted in the infection, and the onset was so rapid that death resulted in two days. In this case a hemorrhage had occurred and a gauze pack had been used, which may have been the source of infection.

In a case of infection in the floor of the mouth death followed soon after the area was opened. The autopsy showed that an embolism of the heart was the true cause of death and had no connection with the operation. A case of cleft palate underwent operation, and the young woman died during the night quite suddenly.

Deaths due to hemorrhage were also reported, but fortunately much progress has been made along these lines and each year sees a decreasing number of those who die through this cause.

### RELATION TO THE EYE

It has been shown by many investigators that there is a direct relation between diseased teeth and the eye. Several baffling instances of eye trouble were cleared up as soon as the infected teeth were removed. It is interesting to note that pyorrheal conditions of the mouth were found responsible for cataract of the eye. The presence of granulomas and diseases of the eye are closely related. There are ten diseases of the eye mentioned which are found to be directly related to diseased teeth and their surrounding structures.

Among them are conjunctivitis, neuritis of the optic nerve, iritis, etc. Some instances are related to interference and loss of vision accompanying the improper injection of a local anesthetic.—*Fortschritte der Zahnheilkunde*, February, 1930.

### THE REMOVAL OF THE MAXILLARY IMPACTED CUSPID TOOTH

By DR. GERARD MAUREL, France

The complications connected with the impacted maxillary cuspid may be due to infection, mechanical injury to adjoining teeth or bridgework, dentigerous cysts, or neuralgias. It is important that an x-ray examination be made, particularly in edentulous cases, as unerupted cuspids are not infrequent and their discovery may solve the question of fugitive pain. Many patients have been subjected to the extraction

of several teeth without helping a neuralgic condition, only to learn later that an embedded cuspid was the true cause.

In removing these teeth the author does not use the elevator, as he fears that it may serve to loosen the adjacent teeth. He makes two incisions wide enough apart to embrace the unerupted tooth, these incisions running posteriorly and about parallel with the dental arch. Anteriorly the palatal soft tissue is stripped away from the necks of the teeth, and the entire soft tissue of the roof of the mouth is retracted, giving a complete view of the bony roof of the mouth, particularly of the point at which the cuspid is buried. The tooth is uncovered with chisel and mallet, and several sutures are carried over to the labial side through the spaces between the teeth. Iodoform gauze is used as a dressing.—*L'Odontologie*, February, 1930.



# DENTAL ECONOMICS

## The Business of Getting Started In Dentistry

By CLINTON H. HENDERSON, D.D.S., San Diego, Calif.

With an armamentarium of a college diploma and a state license the young dentist decides that he is ready to go into business. He has diligently pursued and completed the requirements of the dental college and has conquered that hydra-headed monster, the state board, with neatness and dispatch. He has learned all there is to know about dentistry thus far in his career. Never having experienced the hardships of the profession, these are non-existent as far as he is concerned.

The professors at college were all men of affluence and prestige, graduates of this same college, and had started out to conquer the world no better equipped than he. So why should the world not bow at his feet with the same degree of respect and patronage with which it bows at the feet of the professor?

The professors were all men with a sincerity of purpose, conscious of an intent to do no harm. They placed a layer of down upon the student's couch of learning. They inculcated in him a spirit of high idealism. They taught him, as best they could, the technic and theory of his chosen vocation. Having planted within him the seed of the dental profession, they expected him to nurture it, that it might grow and give off its fragrance

like the acacia in the springtime, forgetting that the weeping willow also grows from the same soil.

Having completed their job, they write "Doctor—Finis" across the face of his diploma and turn him over to the state. He is out of their hands, and he is equipped well or poorly, according to his own ability to learn, to show that the confidence of the state shall not be misplaced.

In summing it up, the conclusion is reached that instead of the student having been qualified to practice dentistry successfully he has been qualified to pass the state board of dental examiners. The inference all along his college career has been that the state board is organized especially to prevent him from ever becoming a dental practitioner. The student's horizon ends at the state board. If he is able to visualize beyond that, it is only in a vague, hazy way. His feeling is that there is no worry beyond the state board, that from there on is a broad greensward of wealth, happiness, leisure hours, and a contented, useful life. Just how it is to be arranged, he does not know.

When the state has accepted the young dentist at face value, the proposition of a location confronts him, and also the purchase on contract of an

excessive amount of equipment and the arrangement of his office. All this is usually undertaken without any well-thought-out scheme—not well thought out because his lack of experience limits his ability to think it out.

#### SELECTING A LOCATION

One of the gravest mistakes made by the young dentist is in the selection of a location. He allows his desires to get the better of his judgment. It is a quality existent in every man to overestimate his own capabilities. He is very likely to peg himself higher than the station for which his background has fitted him. This is not a fault but a good symptom, if it is recognized as such, and if the treatment is applied which will eventually raise him to the station to which he aspires. No man has a right to expect to break in at the top, as the top can be reached only through experience, time and achievement.

In order to make a successful start, the dentist must make his services available to the class of people with which he has been reared. If he was reared in the "lap of luxury," if his friends and associates are of the elite, if his father's and mother's social standing is among the socially elect, then he would make a mistake to try to cater to the laboring class. He would be unable to get the point of view of the laboring class, unable to tune in on their wave length. He would not be liked personally by them and therefore would be doomed to failure, regardless of his ability as an operator.

On the other hand, if the young dentist has been reared among people of the laboring or middle class, his

friends and associates will be in the same class, and, unless he marries a girl whose parents are recognized for their wealth and social standing and he has the finesse to qualify as her social equal, he should mingle with the people whom he knows, and who like him personally. The *D.D.S.* on the end of his name is not in itself a formidable battering-ram with which to crash the gate of society. The sooner he recognizes these facts and selects his location accordingly, the sooner will his "Profitable Practice" begin. Every man should stick to his class and grow and develop with it until his class as a whole has risen to a higher order of things worldly. The development of an ideal situation takes time and energy.

What commodity has the young dentist to offer which is not already supplied in abundance by older, more permanently established men in the locality chosen? He has nothing new nor novel to offer. He does, however, have an advantage. The permanently established dentist in a large community is usually located in a down-town building. With his increase in business and his prestige in the community his fees have increased accordingly from necessity, while his productive hours have decreased per day by choice. In other words, he wishes to work fewer hours per day and produce more dollars per hour. This is as it should be, for he has already used his time, energy and money to establish himself upon a high-standard basis and is therefore entitled to a recompense commensurate with his wishes. A certain percentage of his clientele is not willing to pay him for his services, but there are enough to allow him to continue

satisfactorily. The others will seek new dental connections, and availability has much to do with their choice.

The down-town parking problem in every city of any size has caused many neighborhood business centers to develop at prominent street intersections in the outlying districts. The public patronizes the business places in these districts. Rents are usually much lower and life much less complicated in such sections than down town. A dentist can do just as fine work in these centers as he can down town, and his personal contacts are much easier to make. His individual identity stands out much more clearly, as it is not smothered by his environment.

The conclusion, then, would be that the young dentist has to offer to his clientele enthusiasm, availability of location, six full days and evening service and an attractive fee schedule. These are not offered by the well established down-town dentist.

However, the mere fact that a dentist locates in an outlying district requires of him equipment and office appointment comparable to any down-town office if he would attract business that would otherwise go down town. His conduct and personal appearance must be as meticulous as if he were down town. His dental operations, his attitude, in fact, his whole make-up and contacts must be as studied as if he were expecting the town's elite.

If he cannot attract to himself and his office a respectable and profitable patronage in a neighborhood business center, then grave doubts exist as to his ability to do so in a down-town office. After a few years, when his acquaintance will permit, if he still

desires to do so, he can move down town and will have something tangible to work upon. He will have had time to work out a policy upon which to base his conduct. He will have had time to learn, in part, what not to do, which is quite as important as knowing what to do.

In order to get started, the young dentist must make contacts. If there is no one in his office, he is forced to go outside his office to do so—yes, go right out and solicit business! This procedure might be called undignified and unethical, but reducing one's self to hunger and untruthful newspaper advertising is positively downright disgraceful and dishonest. Every legitimate effort should be exerted to avoid such a calamity. Any man who is too dignified, too proud, too timid or too lazy to solicit help, when he knows that help is all that he needs to make a success, is simply sitting in for a long drag and falling over his own stumbling-block. Enthusiasm and activity will carry a man a long way, while idleness wrecks his morale. Every contact, once made, should be nursed like a new-born babe. In itself it might be non-profitable from a revenue point of view, but there is no estimating the secondary value to be derived from it. Every contact should be considered of the greatest value and treated as such. The smaller business centers have fewer of these calamities than the larger ones. Especially does this hold true in the smaller towns.

#### BUYING AN ESTABLISHED PRACTICE

Another perfectly honorable way of getting started is to buy out an established dental office. Such a thing is



quite often possible. Dentists are restless fellows, and frequently one wants to make a change. It has often been said that it is impossible to buy a dental practice. This is in part true. The "practice" cannot be purchased, but the contacts can be. Such contacts, backed up by a pleasing personality and pleasing deportment, will always be found to pay big dividends. Of course some men want to sell out at a new inventory price plus a bonus. The bonus is all right if it is within reason, but it should carry with it the willingness of the seller to cooperate with the buyer to the extent of aiding in every possible way in the making of contacts and the binding of old patients to the office. The advisability of buying second-hand equipment is always doubtful. There can be no absolute rule governing this procedure. Circumstances may indicate that it would be a good business deal, even though it is to be replaced immediately with new.

#### A FEE SCHEDULE

Regardless of the location, regardless of the method of creating a clientele, there are a few hard and fixed underlying business principles which must be observed. Probably the first one to consider is the fee schedule. The public is glad to pay a certain price for a commodity. A percentage of it is willing to pay a little higher price, but with partial and secret reservation though not open protest. A step higher in the fee schedule will bring down upon the dentist such unfavorable and pronounced protest that recovery becomes impossible, making a change from that community imperative. The

public is not willing to pay a young operator the same fee it is willing to pay an old established man of good repute.

A man with money or backing can create for himself whatever business environment he desires. This holds good for dentistry as well as for any other line of endeavor. This article, however, is meant to deal with the newly graduated dentist who is without means to do just as he desires. It is intended to be of aid to the young man who holds ideals and wishes to gratify them. So much for the choice of a location in a large community!

#### PRACTICE IN A SMALL COMMUNITY

There is another item to be considered in the choice of a lucrative location, which is overlooked by many young dentists. That is the country-town or county-seat practice. This choice of location has many attractions. The financial returns may rightly be expected to start immediately and increase continuously. The chance for personal contacts is made simple by the nature of community life. Publicity is made easy through news columns of the local papers. They are always anxious to cooperate with any and all of the citizens. So without unethical advertising the dentist's name can be brought before the entire population. The caliber of the personnel of the smaller community is just as high as that of the personnel of the cities and possibly higher on the average. In a small community the mere presence of the *D.D.S.* on the end of his name gives the dentist entrée into the best social sets, which in itself makes for an enjoyable and pleasant life. High-

pressure endeavor is almost entirely absent from the smaller communities. There is ample time for week-end and holiday trips. There is an abundance of companionship in the sports of the field and stream. Invariably there are community, fraternal and other activities in which the dentist may enter with pleasure to himself and profit to his business. An occasional trip to the city is made much more enjoyable by the fact that it is occasional.

In order to be a success in a small community, the dentist must of necessity be a better operator than the dentist in a larger city. The reasons are obvious. He must exercise the same degree of thought in the selection, equipping and appointing of his office as in the city. People in a small community resent second-hand equipment and furniture. They feel themselves to be of as high an order as any other people, regardless of any accident in their location. Any slight to the community is taken as a personal slight and will be passed about very quickly.

There are only two or three real objections to a small-town practice. One is the lack of higher educational facilities for the children. There are many couples, however, who would not be affected by this phase of the situation. Another objection is the usual lack of a chance to have the desired office arrangement. Another is the seasonal slumps. The dentist in a small town may get the feeling that he is out of contact with the dental profession. Jealousies may rise between him and the other dentists in the town, but if the right spirit is maintained and social and professional contact is encouraged, there should be no reason for these

jealousies. That, however, is up to the men themselves, as there is no need for it.

Many fertile fields in small towns are open to dentists who are willing to give and take, and there is a reasonable balance between the giving and the taking. Neither a dentist nor any other professional man can expect to take anything out of his business until he has put something into it that will yield a product to be taken out. No community, large or small, will give to any dentist a ready-made, organized, going practice. It just is not in the nature of things for it to be that way. The law of compensation regulates the returns on human actions, just as surely as it does the returns on physical or chemical actions. For every action there will be a compensating reaction. The individual's conduct with human contracts will create reactions for good or for bad commensurate with and in equal power to the actions. There cannot be the slightest deviation from this law. The very fundamental of nature demands that like shall always produce like and in no case an opposite. Nature forbids the growing of peaches on a cucumber vine.

#### OFFICE CONDUCT

Following the selection of a location, the equipping and appointing of an office and the adoption of a policy, the young dentist is confronted with the details of his office conduct. His surroundings are new and unfamiliar. He is away from his old associates. He feels isolated, alone in the world, and his ready cash is completely or nearly exhausted. With all of this, though, he feels a sense of safety. His sign on

the window will surely bring him an abundance of business. The blindness of youth is certainly a blessing, a blessing in that it breeds an optimism far beyond a normal expectancy.

The man on the street is interested entirely with his own problems of life, and if he sees the sign at all, it means nothing to him. A sign should be considered in the light of directing searchers and not as a creator of new business. The beginning dentist's first contacts must be made outside his office. Then, and then only, will his sign be of any appreciable value to him in the beginning. Of course, after a name has been seen a number of times and over a long enough period of time it does begin to register, but then usually only after the person's attention has been called to it through some outside medium.

The days grow into weeks, the first installment on his equipment is due, and he is a lucky lad indeed if he is able to meet it from his office earnings. The larger the community, the more complicated his environment, the less likelihood there is of his being able to do so. The reverse, then, might be considered logical, but only to a degree. There is such a thing as choosing a community too small. This also should be avoided. The beginner should confine his fees within the bounds that the public is glad to pay. In this way he will have very few, if any, bad accounts, he will please his patients, and he will make for himself a lucrative practice.

#### THE DENTIST'S ATTITUDE TOWARD LIFE

The next business fundamental to

be considered is the dentist's attitude toward life in general. If he assumes a superior air with a stiff neck and a high-hat bearing, he will repel the very people whom he is trying to attract. If he assumes a servile attitude, he registers inferiority and insignificance. No one is proud of the fact that he has patronized an insignificant dentist. Then, it would seem, a quiet, cultured appearance, a modified voice, a pleasant and dignified approach with a personal interest in every contact are the necessary attributes of a sure winner.

The fact that the dentist has accepted the authority that the state has granted him also carries with it his sworn implication that he will assume therewith the responsibility of doing his work to the best of his ability. The law requires that his ability be an average of the ability of all the dentists in his locality. If he claims superiority for himself in any particular branch of dentistry, then the law requires him to be a superior operator in that branch.

Promises made to patients that are improbable of fulfilment are violations of the confidence which the state has created in the mind of the public—that the licensed dentist is a capable, trustworthy man. These confidences should be guarded with a diligence becoming a gentleman. A little thought on the part of the dentist will bring to mind other pitfalls to be avoided.

Sincerity of purpose, a close mental attitude of service, close application to duty, a clean, healthy body and a receptive mind will develop a personality. Experience, study, thought, good reading, with a constant effort toward im-

provement, will develop judgment. A sites, personality, good judgment and sincere desire to improve in technic will ability, no dentist need fear the future. develop ability. With these three requi- 612 Bank of Italy Building.



[MOTIVES]

*The men who persistently insist that they practice dentistry primarily because of the unusual opportunities afforded them thus to serve the urgent needs of humanity have done more to cause the finger of derision to be pointed at us than have the entire ensemble of highbinder artists who utilize dentistry to extort exorbitant fees from a gullible public. In my opinion, the man who elected dentistry as his life work and was prompted in so doing only by altruistic and humanitarian motives is a unique and exceedingly rare specimen.*

—WARNOCK.

## PRACTICAL HINTS

THIS DEPARTMENT IS NOW BEING CONDUCTED FROM THE OFFICE OF THE DENTAL DIGEST. TO AVOID UNNECESSARY DELAYS, HINTS, QUESTIONS AND ANSWERS SHOULD BE ADDRESSED TO EDITOR PRACTICAL HINTS, THE DENTAL DIGEST, 220 WEST 42D STREET, NEW YORK, N. Y.

NOTE—Mention of proprietary articles by name in the text pages of THE DENTAL DIGEST is contrary to the policy of the magazine. Contributions containing names of proprietary articles will be altered in accordance with this rule.

### *Editor, Practical Hints:*

I have a patient who complains of numbness in his lower lip as a result of novocain anesthesia. This anesthetic was given about four weeks ago for the extraction of the left mandibular first molar and second bicuspid. Both mandibular and mental injections were made. I have been making such injections for several years, and this is the first prolonged anesthesia that I have encountered. What is your opinion of this case?

T. F. H.

ANSWER.—The case you describe is not an uncommon occurrence. It may be due to one of two causes, first, a direct injury to the nerve by means of the needle or from the mechanics of the extraction; second, the failure to remove all the alcohol from the syringe or needle, granting of course that this had been used.

It is not pleasant for the patient, but in the majority of cases it is not serious, since in time sensation returns, the date of which it is impossible to predict.

### *Editor, Practical Hints:*

I have a patient, aged about 30, in

good health, who has hard lumps in the tissue about the site of injections for extraction. I have extracted several teeth for this patient, and this hard area appears a few days after the extraction. It is now six weeks since the first extraction, and these hard areas still persist, notwithstanding the fact that the x-ray shows no pathology. I have used various drugs and violet ray with no noticeable effect, except that these areas would soften up slightly and get somewhat smaller temporarily and then recur.

I should appreciate any suggestion you may make in regard to this case.

C. O.

ANSWER.—The case you present is certainly one that is difficult of diagnosis, and one concerning which we would not care to express an opinion. It does not seem possible that the lumps could be due to infection, since after a period of six weeks more positive developments would have occurred.

We will publish your letter in *The Dental Digest* in the hope that some of our readers may be able to help.



*Editor, Practical Hints:*

Any advice that you can give upon the following case will be appreciated.

After finishing all other needed work in the patient's mouth, he insisted that I extract his left lower first molar. I thought that the tooth was vital and advised him to let me try to save it, but, as it was pretty badly broken, I followed his wishes and extracted it without any trouble of any kind and, as he said, without any pain to him.

I was out of town for three days and upon my return the patient came to the office, saying that he had had considerable trouble. I neglected to say that after extracting the tooth I broke the roots open and was sure that the pulp had been vital, certainly not abscessed. I washed out the sockets gently and removed a gummy sort of a clot which was black in spots. I applied a loose dressing, which gave relief, but I have had to do this several times to relieve the patient.

The patient is practically over the trouble now, but I am curious to know what might have caused it.

F. H. H.

ANSWER.—Without doubt the trouble you describe was due to a case of dry socket. This might have been caused by bone injury during the extraction or by a low-grade infection. It frequently occurs in spite of the best efforts for asepsis, and not much can be done in the way of treatment except to keep the patient as comfortable as possible.

*Editor, Practical Hints:*

I wish some advice on the following case:

The patient has had three plates in the last fifteen years, with no previous trouble. About five years ago I made an upper against an old lower, and recently he has had a bad metallic taste in his mouth, both upper and lower but mostly upper. The case is constructed with medium-brown rubber. There is no soreness—just the taste always present in the mouth. I have tried all sorts of mouthwashes and cleaned and polished the plates, but with no relief. What would you suggest as to the cause and treatment?

P. J. B.

ANSWER.—From your description of the case it would appear that the trouble is due to some gastro-intestinal disturbance and should come under the care of a physician.

*Editor, Practical Hints:*

I should like very much to get some information on the following case:

I have had a patient come to me for an upper plate. He has a very flat mouth and has already had two plates made. It seems hard to get the proper suction. Do you know of any good suction arrangement that I could use?

H. J. H.

ANSWER.—Suction devices as a rule are not satisfactory, for after a time they cause congestion and hypertrophy of the tissues, which destroys the value of the cups.

In cases of flat mouth special care must be taken to secure adaptation, and the occlusion and balance of the teeth must be as nearly perfect as possible. The success of the denture will be due in great measure to the determination

and ability of the patient to overcome the difficulty.

*Editor, Practical Hints:*

I should certainly appreciate your opinion on a case which has puzzled me greatly.

The patient, a woman, aged 58, first came to me the latter part of December 1929 with a sore spot on the right palatal surface of her mouth. This sore spot was in the region of the right first bicuspid and cuspid. It was about 10 mm. wide from the crest of the alveolar ridge posteriorly (toward the roof of the mouth) and about 25 mm. long mesio-distally. The area was noticeably inflamed, but there was practically no swelling. When she first presented, she wore a badly fitting upper partial denture, and the right cuspid was then in place but quite loose. I first laid the trouble to the rocking of the plate, which seemed to ride on this area. I advised the extraction of the cuspid, as it was quite loose, and the fitting of a new denture, which advice she followed. There are no teeth present now from the first molar to the first molar.

After the cuspid had been extracted about three weeks, I took an impression and made a new vulcanite denture. The sore spot was somewhat better at the time of taking the impression but not entirely well. However, I inserted the denture and it fitted very nicely, and the patient was very much pleased with the comfort it gave her.

This denture is still as comfortable and has caused her no annoyance at any time, but about ten days ago the mouth began to feel sore again at this same spot (it never has felt entirely well), and she went to her physician, who cauterized the area with  $\text{AgNO}_3$  and prescribed a mouthwash and also something to relieve the high acid condition of her system. Physically she is in very good health and condition.

Today she returned to her physician, and her mouth was worse than before. He sent her to see me. The physician is frank about it and told her, as I did, that he did not know what it was. I advised her to see an oral surgeon, which she promised to do. Now, getting back to this condition, she claims it feels to the tongue like a lot of little blisters, and when she presses up on them they rebound. There is a soreness to pressure about 5 mm. from the crest of the ridge opposite the cuspid. When the denture is in the mouth, the spot does not pain so much as when it is out.

I have thought of rubber sore mouth, but hardly believe it to be that, for she has had rubber dentures for several years and it is only within the past six months that this condition has developed.

E. G. B.

ANSWER.—We regret to say that we cannot help you with this case. We shall be glad to publish your letter in the hope that some of our readers may be able to assist you.

# DENTAL SECRETARIES and ASSISTANTS

## Secretaries' Questionnaire

All communications should be addressed to Elsie Pierce, care of  
THE DENTAL DIGEST, 220 West 42d Street, New York, N. Y.

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NOTE—HAVE YOU A BETTER WAY? HAVE YOU A TIME-SAVING SHORT-CUT? DO YOU KNOW A "STUNT" THAT LIGHTENS THE WORK OR MAKES FOR GREATER EFFICIENCY IN THE OFFICE? IF SO, WRITE TO ELSIE PIERCE. YOU MAY HELP MANY GIRLS WHO ARE BEGINNERS—AND YOU KNOW HOW YOU NEEDED HELP DURING YOUR FIRST FEW MONTHS IN A DENTAL OFFICE. PERHAPS YOU NEED HELP NOW. WRITE TO ELSIE PIERCE—SHE WILL HELP YOU.

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*Dear Miss Pierce:*

In reply to the request for the cleaning of impression trays in the April issue of THE DENTAL DIGEST I suggest the boiling of the trays in water to which has been added a little sal soda (washing soda). Alkaline solutions destroy or dissolve aluminum trays, hence when the latter are placed in the cleansing solution they must be watched carefully and not allowed to remain in it too long. When trays have been freed of debris, polish them on a medium-soft brush wheel.

Kerosene will remove compound from aluminum trays without injury to the trays and then they can be washed and polished. Wipe the hands well with a dry cloth to remove the kerosene before washing, or use rubber gloves.

E. R. S., D.D.S., Iowa.

We thank the Doctor for his suggestion and feel certain that it will be appreciated by our readers.

*Dear Miss Pierce:*

I believe you have pretty well answered E. M., Michigan, properly as to why dentists fail to compensate their assistants. However, I should like to add a few remarks that might help her, and some of the others, to greater rewards.

It is my opinion that every girl is given ample opportunity to make herself indispensable to the dentist-employer by thorough application to her duties. However, there are some details which, if properly cared for, will save the dentist many dollars, which I will enumerate: (1) to be on time, (2) cleaning and sharpening of instruments, (3) accurate daily recording of all operations, (4) regular mailing of statements to patients, (5) keeping a correct record of patients who desire to be called for prophylactic appointments and strictly notifying them at the proper time.

These are only a few, but let E. M. check back on them and apply herself

accordingly. If her own employer does not pay her well, there will be another dentist who will be glad to do so.

Dr. A. W. S., N. Y.

*Dear Miss Pierce:*

I have been keeping the teeth that the Doctor has extracted, at his request. I have sterilized them and now have quite a number on hand in a sterilizing liquid. Will you please tell me what to do to clean them and whiten them so that there will be no odor? I want to put them away dry.

C. G., W. Va.

ANSWER.—I would suggest that you boil the teeth in water to which has been added washing soda or washing powder, for some fifteen or twenty minutes. Take them out of the water and brush on a medium-stiff brush wheel to remove the debris that may still cling to them. Then place in a glass container and cover with a weak solution of hydrochloric acid for a few minutes. Wash off in clear running water and place in a bicarbonate solution to neutralize any acid that may lurk in decayed sections or crevices. Place in the dry chamber of the sterilizer until thoroughly dry; then place between layers of felt or other soft material in boxes. If you have no dry chamber in the sterilizer, dry them in a gas oven under moderate heat. You may find it necessary, following the hydrochloric-acid bath, to rebrush the teeth to remove such stains as may still cling to them. A little flower of pumice will help.

*Dear Miss Pierce:*

I have just had a little experience that I should like to bring to your attention so that you may place it in your valuable department for the edification of other assistants who may be troubled in the same manner.

Several months ago a tiny sore spot developed on the thumb of my right hand. It did not bother much at first, but soon it became quite an annoyance as a large fissure or crack in the skin, with a roughened margin. I used the usual home remedies, such as mercuriochrome and carbolated vaseline, but, as these had no effect, I went to a physician. He treated me for a few visits without much result and was applying violet rays when one morning, as I was mixing some amalgam for the dentist, I had a flash of intuition and at my next visit to my physician I said, "Doctor, do you think that my sore thumb could come from mixing amalgam?" And, lo, the mystery was solved! I had not remembered to tell the physician of this phase of my work, although he had asked me if I developed the x-rays, as the developing solution sometimes poisons some people and causes very sore fingers and hands.

So I was cautioned never to mix amalgam with my thumb, unless I wore a rubber finger to protect it from the mercury, and always to protect the palm of my hand with a piece of chamois skin if I had to mix amalgam in that fashion.

This may help to prevent other assistants from falling a victim to the same trouble, so I pass it along, with great appreciation for your fine suggestions, advice and methods that one is sure to find each month in THE

DENTAL DIGEST under the Secretaries' Questionnaire. More power to you!  
H. L. W., Conn.

We thank H. L. W. for her interest and contribution. It is sure to prove helpful.

## Educational and Efficiency Society for Dental Assistants, First District, New York, Inc.

A regular meeting of the Educational and Efficiency Society for Dental Assistants, New York, Inc., was held on April 8, 1930. A symposium on dental assisting was presented by the members, such topics as *Why I Am a Dental Assistant, How I Can Best Serve the Society, What the Society Does For Me, What the Dental Assistants' Societies Are Trying to Accomplish, Cooperation and Its Advantages, Are the Duties of the Dental Assistant a Maid's Service or a Professional Service?* being discussed from the platform by the Misses McMurdo, Maloney, Weisz, Cohen, Danenbaum and Shoemaker, and from the floor by the general membership.

The following were nominated as officers for the ensuing year: President, Elizabeth V. Shoemaker; Vice-President, Mary A. O'Connor; Corresponding Secretary, Mary S. Tuck; Recording Secretary, Gertrude Romaine; Treasurer, Fannie Cohen; Registrar, Gertrude Gehm.

A class in general anesthesia was held on April 23, with Dr. B. B. Gilmore as instructor, closing the class sessions for the season. The classes conducted by the Society for its members throughout

the past year have covered all phases of dental assisting. A similar program will be conducted in the autumn.

At the regular meeting of the Clinic Club on Monday evening, April 21, clinics on economy suggestions, surgical assistance and sterilization were presented. On April 24, a group of table clinics on the work of the dental assistant was successfully presented before the meeting of the Connecticut State Dental Society at Stamford, Conn. Demonstrations were given also at the annual meeting of The Dental Assistants Association of the State of New York at the Hotel Commodore, New York, May 13-16, 1930.

The Society meets regularly on the second Tuesday evening of each month, October to May, inclusive, at the Academy of Medicine, Fifth Avenue and 103rd Street, New York. Dental assistants employed in ethical dental offices are invited to become members and to share in the educational advantages the Society offers through its meetings, clinics, classes and library. Further information may be obtained by addressing the President, Ethel R. Meyerson, 1673 University Avenue, New York.



## Montreal Dental Assistants Association

The Montreal Dental Assistants Association held its last meeting of the season at McGill University Dental Department on April 28, 1930, with Miss Esther Moye presiding.

Reports of the year's activities were read by Miss E. Howden, recording secretary, and Miss Elsa Vospey, corresponding secretary, and Miss Grace Robinson, treasurer. The president expressed thanks to all the officers for the splendid work they had done during the past year.

The following officers were elected: Mrs. Mary McKannan, President; Miss E. Stubina, Vice-President; Miss Esther Moye, Recording Secretary; Miss M. Voisine, French Secretary;

Miss Grace Robinson, Treasurer (re-elected).

The president expressed the appreciation of the Association to Miss Rachel Ratner, founder of the organization, for her cooperation. A vote of thanks was extended to Dr. George S. Cameron, Professor of Prosthetics of the McGill Dental Faculty, and to Dr. Arthur L. Walsh, Dean, for acting in an advisory capacity. She also thanked the press for their kind services in behalf of the Association.

Letters of invitation to the Toronto Dental Nurses Alumnae Convention in May and to the annual meeting of the American Dental Assistants Association in Denver in July were read.

## Richmond (Va.) Dental Assistants Society

The annual meeting of the Richmond Dental Assistants Society was held in the office of Drs. Broadus and Fleet in the Grace Securities Building on April 7, 1930, following a dinner at the Graylan Tea Room.

The report of the year 1929-1930 was as follows:

Nine meetings held during year; one social meeting; one meeting uncalled.

Speakers of the year were as follows:

Dr. R. D. Thornton, Dean, Medical College of Virginia—*The Relation of the Dental Assistant to the Dental Profession and the Public.*

Juliette A. Southard, President, American Dental Assistants Association,

presented the Society with the history, ideals and future of the dental assistants.

Dr. R. H. Jefferies—*The Importance of the Dental Assistant to the Dentist and the Public.*

Dr. R. L. Simpson—*The Loyalty of the Dental Assistant to Her Employer and the Dental Profession.*

Dr. A. M. Wash—*The History and Importance of X-Ray.*

Demonstrations were given by Miss M. S. Channonhouse, Instructor of the Dental Assistants Course, Medical College of Virginia, on *Sterilization*, and by H. K. Wakefield of the L. D. Caulk Co., Milford, Delaware, on *The*

*Manipulation of Plastic Filling Materials.*

A social meeting was given by the President, Miss Julia Clay.

The reports of the Treasurer and regular committees were given.

The officers elected for the ensuing year were: President, Miss Julia B. Clay; Vice-President, Mrs. Irma Wer-muth; Secretary - Treasurer, Miss Frances Matheny. The regular committees were appointed by the president.

After the business meeting Dr. G. W. Holliday, Professor of Prosthetic Dentistry of the Medical College of

Virginia, addressed the Society on *The Effect of Diet and Disease on the Development of Teeth.*

The object of this Society is to gain for its members the educational and social advantages arising from fellowship and cooperation with women engaged in the conduct of dental offices who are desirous of assisting in establishing higher standards of service and efficiency in the practice of dentistry.

The Society meets regularly the first Monday night of each month at 6:30 P. M.



[PREVENTION]

*A word on the status of preventive dentistry. It is impossible to prevent something that has already occurred; we cannot prevent appendicitis by operating on the patient afterward; we cannot prevent the necessity for dental work or dentistry by filling a cavity, however small it may be. Prevention in medicine does not mean curing a disease after it has already come into existence; it means, literally, to prevent the original occurrence of the disease by some means active before the disease appears.*

—CROSS.

# BOOKS RECEIVED

A BOOK MAY BE AS GREAT A THING AS A BATTLE—DISRAELI

*Oral Diseases, A Practical Treatise Offering Diagnostic and Therapeutic Aid to the Practitioner of Medicine and Dentistry*, by James L. Zemsky, D.D.S., Attending Oral Surgeon to the Midtown Hospital, New York; Lecturer on Oral Surgery, Postgraduate Courses, Allied Dental Council; Member Fédération Dentaire Internationale and various dental and stomatological societies.

This book is written primarily for the general practitioner who is interested in oral surgery or who, by force of circumstances, is compelled to practice this branch of dentistry. It is a distinct departure from the usual method of teaching this subject and has been successfully used by the author in his postgraduate instruction. It deals in a concise and practical manner with many of the problems that may confront the dentist, and with which he is more or less unfamiliar. In many cases a differential diagnosis is given.

In common every-day occurrences, such as extractions and abscesses, many points are emphasized that will be very much worth while to the man who does not have a specialist within easy reach. Theory has been eliminated, and everything in the book is of the utmost practical value and has stood the test of time and use. It is essentially a book of

reference, the very complete index making the finding of the subject-matter easy, and the style, which is concise and to the point, making its study a pleasure. It has all the interest and value of a clinic.

This work appeared serially in *THE DENTAL DIGEST*, and due to its popularity and demand it was put into its present form. We feel sure that it will be received with the approval it well deserves.

386 pp., with 414 illustrations and index. Brooklyn, N. Y.: Physicians and Surgeons Book Co., 1930.—A. M. J.

*An Outline of Oral Surgery for the General Dental Practitioner*, by James L. Zemsky, D.D.S. (see above).

Where does the practice of dentistry end and the field of oral surgery begin? Legally, of course, the general practitioner has the right to perform any and all operations in the oral cavity, but there is a moral law that is higher than the statutes. No dentist should attempt that which he is not capable of doing well.

This has led many men to do nothing but restorative dentistry, passing over everything in the nature of surgery to the specialist. The author of this book

believes, and rightly, that there are certain surgical procedures with which the general practitioner should be familiar, and which he himself should perform. These are the subject-matter of this treatise.

After a chapter on anesthesia, a most essential requisite in this kind of work, and one on the principles of surgical technic the author goes into the subject of the surgical removal of teeth, especially those that are unerupted and malposed. Abscesses, osteomyelitis, cysts, sinusitis, root amputation, dislocations and alveolectomy are some of the subjects treated and amplified by admirable illustrations and many case reports. No amount of reading will make any one adept in surgical procedures, but for the man who has an inclination in that direction this book will fill a great need.

The press-work of this and its companion work are fine examples of the printing art, and the publisher is to be congratulated on their appearance.

161 pp., with 116 illustrations and index. Brooklyn, N. Y.: Physicians and Surgeons Book Co., 1930.—A. M. J.

*The Elements of Anatomical Articulation; or, The Mathematics of Dental Prosthetics*, by F. W. Rapp, Registered Dentist of New South Wales, Australia.

This short monograph has been writ-

ten for the dental mechanic and is an attempt to place full denture construction on an engineering basis. Whether or not the author accomplishes this, we must leave to the reader.

64 pp., with 26 illustrations. London: John Bale, Sons & Danielsson, Ltd., 1930.—A. M. J.

*Elementary Histology for Dental Hygienists*, by Charles F. Bödecker, D.D.S., F.A.C.D., Professor of Dental Histology and Embryology at Columbia University Dental School, New York, N. Y.

This book is a clear and concise presentation of the rudiments of histology, and from it the student may gain an elementary idea of the structure of the human body. For this reason diagrams have been used as illustrations, though it might have added to the value of the work if a few photomicrographs had been included so that the reader could learn something of the actualities.

The book is divided into two parts, the first dealing with general histology and the second taking up the tissues of the oral cavity. It ably fulfills the purpose for which it was written.

71 pp., with 21 illustrations and index. New York, N. Y.: William Albert Broder, 1929.—A. M. J.



# EXTRACTIONS

No Literature can have a long continuance if not diversified with humor—ADDISON

Just pull the cork and let nature take its course.

A man who for one reason or another avoids the census enumerator might be called a counter jumper.

## AT THE COLLEGE DINNER

(Chairman)—The Razzberry Quartette will now sing that famous Scotch song, entitled "For two cents I would throw this penny away."

The Naval Research Laboratory reveals that the planet we live on has a tail. It would be humiliating to discover that we are the fleas.

Preliminary census reports show that American villages are doomed. There is no longer room for them between the filling stations.

The great editor was instructing the new reporter how to become a rewrite man. "Make it short and snappy—boil it down—that's the plan." To try him out the editor handed him the Ten Commandments. The reporter wrote "Don't!"

One of the census takers tells this story: "I asked a woman about her husband's occupation. She said, 'I don't know anything about it, but I can tell you his average income. It's 4 A. M.'"

## THE LAND OF PLenty

Nobody need complain of hunger when a half-pound trout can be caught with less than a hundred dollars worth of tackle.

If the dear ladies had clamored for snake-skin shoes some years ago, instead of today, there would never have been any snakes in Ireland.

"Are you the photographer?"

"Yes, sir."

"Do you take children's pictures?"

"Yes, sir."

"How much do you charge?"

"Three dollars a dozen."

"Well, I'll have to see you again. I've only got eleven."

When Adam, in bliss,  
Asked Eve for a kiss,  
She puckered her lips with a coo;  
Gave looks so ecstatic,  
And answered emphatic,  
"I don't care, Adam, if I do."

There is practically nothing left for Admiral Byrd to hunt for now, unless he drops a collar button.

(Junior)—Say, pa, did Edison make the first talking machine?

(Pa.)—No, my son. God made the first one, but Edison made the first that could be shut off.

If the merger movement continues, we'll soon see colleges consolidating to get better football teams.

The invention of the harp was due to an accident. On the other hand the inventor of the bagpipes was a Highland cottager who got the idea after stepping on a cat.

"I am a woman of few words," announced the haughty mistress to the new maid. "If I beckon with my finger, that means come!"

"Suits me, mum," replied the maid. "I'm a woman of few words meself. If I shakes me head, that means I ain't comin' begorro."

## ROUND-TABLE SECRETS

(Clara)—Rose told me that you told her that secret I told you not to tell her.

(Belle)—She's a mean thing! I told her not to tell you.

(Clara)—Well, I told her I wouldn't tell you she told me, so don't tell her I did.

## WHAT THE MEEK DO GET

The eagle eats the robin,  
And the robin eats the worm,  
And the worm he eats the little bug  
That feeds upon the germ;  
And the germ devours his brothers,  
With eagerness and mirth—  
And then they tell us that the meek  
Inherit all the earth.

And Man, the chief inheritor,  
He eats the gentle lamb,  
The turkey and the chicken,  
The cow and goat and ram;  
He gobbles down the oyster,  
The mussel, fish and clam,  
And eats the baby pigeon  
With calves'-foot jelly jam.  
The creatures that he captures  
Are doomed to death from birth—  
And yet they tell us that the meek  
Inherit all the earth.



# FUTURE EVENTS

THE NEVADA STATE BOARD OF DENTAL EXAMINERS will hold its next meeting in Room 8, Masonic Temple Building, Reno, Nevada, beginning promptly at 9:00 a. m., June 2, 1930.

All applications and complete credentials, together with fee, must be in the hands of the Secretary at least twenty days prior to the examination.

G. C. STEINMILLER, D.D.S., *Secretary*,  
P. O. Box 274, Reno, Nevada.

THE ASSOCIATION OF THE ALUMNI OF THE SCHOOL OF DENTAL AND ORAL SURGERY OF COLUMBIA UNIVERSITY will hold its final meeting of the year at the Columbia Club, 4 West 43rd Street, New York, June 6, 1930, at 8:00 p. m. Important business will be transacted, and there will be election of officers.

H. M. MASLANSKY, *Secretary*,  
57 West 57th Street, New York.

## EXAMINATION FOR APPOINTMENT TO DENTAL CORPS OF U. S. NAVY

A competitive examination for appointment to the Dental Corps of the United States Navy will begin June 9, 1930, at the U. S. Navy Medical School, Washington, D. C. Candidates must be citizens of the United States, between twenty-one and thirty-two years of age at the time of appointment, and graduates of recognized dental schools. The examination will be both theoretical and clinical, and the usual duration is about seven days. A circular containing full information relative to the Dental Corps and the prescribed form of application may be obtained from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C. No allowance is made for the expense of applicants appearing for examination.

C. E. RIGGS,  
Surgeon-General, U. S. Navy.

THE NORTHEASTERN MASSACHUSETTS DENTAL SOCIETY will hold its annual convention at the New Ocean House, Swampscott, Mass., June 9-11, 1930.

For information, communicate with

HENRY I. YALE, D.M.D., *Secretary*  
Peabody, Mass.

THE VIRGINIA STATE BOARD OF DENTAL EXAMINERS will hold its regular meeting at the Medical College of Virginia, Richmond, Va., at 9:00 A. M., June 10, 1930.

Applicants are required to present a certificate from the State Board of Education showing that they have had one year of academic education equal to one year of college work.

Applications, with fee and photograph, must be filed ten days before the date of examination. For application blanks and other information, apply to

JOHN M. HUGHES, D.D.S., *Secretary*,  
715 Medical Arts Bldg., Richmond, Va.

THE MASSACHUSETTS BOARD OF DENTAL EXAMINERS will hold an examination for registration for both dentists and oral hygienists in the City of Boston, Mass., June 10-14, 1930.

Full information, application blanks, etc., may be secured at the office of the Secretary, Room 146, State House, Boston. All applications must be filed at the office of the Secretary at least ten days before date set for examination.

W. HENRY GRANT, D.M.D., *Secretary*.

THE GEORGIA DENTAL HYGIENISTS ASSOCIATION will hold its annual meeting at the Ansley Hotel, Atlanta, Ga., June 11, 1930. A very interesting program is being prepared, including papers by Sherman L. Davis, Ph.D., of Indianapolis, Ind., and C. J. Hollister, D.D.S., of Harrisburg, Pa.

A cordial invitation to attend is extended to members of the dental profession, dental assistants and dental hygienists.

ADDIBEL FORRESTER, *Secretary*  
803 Atlanta Nat. Bank Bldg.,  
Atlanta, Ga.

THE MINNESOTA STATE BOARD OF DENTAL EXAMINERS will hold its next meeting at the College of Dentistry, University of Minnesota, Minneapolis, Minn., on June 12, 1930. Applications should be in the office of the Secretary by June 1st.

W. H. SMITH, D.D.S., *Secretary*,  
601 Donaldson Bldg., Minneapolis, Minn.

THE INDIANA STATE BOARD OF DENTAL EXAMINERS will hold its annual meeting in the House of Representatives Room, State House, Indianapolis, Ind., June 12-16, 1930, for the purpose of examining all applicants with proper credentials. Applications should be in the hands of the Secretary one week before the beginning of the meeting.

For applications, clinical requirements and other information, address

J. M. HALE, *Sec'y-Treas.*  
Mount Vernon, Ind.

THE TEXAS STATE BOARD OF DENTAL EXAMINERS will hold its next regular meeting at the Texas Dental College, Houston, Texas, on June 16, 1930, promptly at 8:00 A. M., for the purpose of examining applicants for the practice of dentistry in Texas. Applications with photograph and fee must be in the hands of the secretary by June first.

For further information and application blanks, communicate with

MAXWELL C. MURPHY, D.D.S., *Secretary*  
King's Daughters' Hospital, Temple, Texas.

THE ILLINOIS DEPARTMENT OF REGISTRATION AND EDUCATION will conduct examinations for registration to practice dentistry in Illinois on the following dates:

June 17-21, 1930, at the Northwestern University Dental School, 311 East Chicago Avenue, Chicago, Ill.

November 18-21, 1930, at the University of Illinois College of Dentistry, 1838 West Harrison Street, Chicago, Ill.

THE DELAWARE STATE BOARD OF DENTAL EXAMINERS will hold its next meeting in the Municipal Building, Tenth and King Streets, Wilmington, Del., June 18-19, 1930, from 9:00 A. M. to 5:00 P. M.

For further information, address

W. S. P. COMBS, *Secretary*,  
Middletown, Del.

THE MAINE DENTAL SOCIETY will hold its annual convention at the Poland Spring House, South Poland, Maine, June 19-21, 1930.

For further information, communicate with

W. D. TAYLOR, D.M.D., *Secretary*  
Mechanic Falls, Maine.

THE ARKANSAS STATE BOARD OF DENTAL EXAMINERS will hold its next meeting at the LaFayette Hotel, Little Rock, Ark., on June 23, 1930, at 8:00 a. m., for the purpose of examining all applicants possessing the proper credentials.

Applications should be in the hands of the Secretary at least one week before the date of meeting. For application blanks, clinical requirements, etc., address

FLOYD P. TRAVIS, D.D.S., *Secretary*  
Osceola, Ark.

THE CONNECTICUT DENTAL COMMISSION will meet at Hartford, Conn., June 25-28, 1930, for the examination of applicants for license to practice dentistry and dental hygiene, and to transact any other business proper to come before it.

Applications should be in the hands of the Recorder at least two full weeks before the meeting. For application blanks and other information, apply to

ALMOND J. CUTTING, *Recorder*,  
Southington, Conn.

THE NORTH DAKOTA STATE BOARD OF DENTAL EXAMINERS will hold its next meeting at Fargo, N. D., July 8-11, 1930. Applications for examination must be in the hands of the secretary by July 1st.

GILBERT MOSKAU, D.D.S., *Secretary*  
Grand Forks, N. D.

THE ARIZONA STATE BOARD OF DENTAL EXAMINERS will hold its next meeting at Phoenix, Ariz., July 14-19, 1930. Applications must be in the hands of the Secretary not later than June 30th.

For further information, communicate with

WM. J. JOHNSON, D.D.S., *Secretary*  
1105 Luhrs Tower Bldg.  
Phoenix, Ariz.

THE NEW MEXICO BOARD OF DENTAL EXAMINERS will hold its next meeting at Albuquerque, N. M., July 16-18, 1930, for the purpose of examining applicants for the practice of dentistry.

Application, together with fee and photograph, should be in the hands of the Secretary by July first. For further information, address

J. J. CLARK, D.D.S., *Secretary*  
Artesia, N. M.

THE AMERICAN ACADEMY OF PERIODONTOLOGY will hold its seventeenth annual meeting at the Antlers Hotel, Colorado Springs, Colorado, July 17-19, 1930.

CLYDE C. SHERWOOD, *President*  
1304 Second Natl. Bank Bldg.,  
Toledo, Ohio.  
C. H. GRACEY, *Secretary-Treasurer*  
269 Rowena Street, Detroit, Mich.

THE ASSOCIATION OF AMERICAN WOMEN DENTISTS will hold its ninth annual meeting at the Olin Hotel, Denver, Colorado, July 21, 1930.

MILDRED W. DICKERSON, *President*,  
1624 I St., N.W., Washington, D. C.  
WILHELMINA YERETSKY, *Sec'y-Treas.*,  
26 Sheldon Ave., S.E., Grand Rapids, Mich.

THE INTERNATIONAL COLLEGE OF DENTISTS will hold its annual Convocation at the Shirley-Savoy Hotel, Denver, Colorado, July 21-25, 1930. The exact time and place will be posted on the bulletin board of the hotel, as it is desired to hold the Convocation at a time when it will not conflict with any of the meetings of the American Dental Association or any of its affiliated bodies.

LOUIS OTTOFY, D.D.S., *Registrar*,  
175 Vernon Terrace, Oakland, Cal.

THE AMERICAN BOARD OF ORTHODONTIA will hold a meeting in Denver, Colorado, following the meeting of the American Dental Association in July.

Those orthodontists who desire to qualify for a certificate from the Board, as outlined in the article entitled *The American Board of Orthodontia*, page 50 of the January issue of the *International Journal of Orthodontia, Oral Surgery and Radiography*, may receive full information and application form from the Secretary of the Board.

ALBERT H. KETCHAM, *President*,  
1232 Republic Bldg., Denver, Colo.  
OREN A. OLIVER, *Secretary*,  
1101 Medical Arts Bldg., Nashville, Tenn.

THE AMERICAN DENTAL ASSISTANTS ASSOCIATION will hold its sixth annual meeting in Denver, Colorado, July 21-25, 1930.

RUTH F. ROGERS, *General Secretary*  
Room 803, 223 West Jackson Blvd.  
Chicago, Ill.

THE AMERICAN DENTAL HYGIENISTS ASSOCIATION will hold its seventh annual meeting in Denver, Colorado, July 21-25, 1930.

AGNES G. MORRIS, *Secretary*,  
886 Main Street,  
Bridgeport, Conn.

THE SIXTH GREATER NEW YORK DECEMBER MEETING FOR BETTER DENTISTRY will be held at the Hotel Pennsylvania, New York, December 1-5, 1930.

The committee is preparing a program which will be both interesting and of high scientific value. Essays and clinics will be held, and progressive teaching clinics along various lines will be an important feature. The topic discussions will again occupy an important place on the program.

A manufacturers' exhibit will be held in the hotel simultaneously with this meeting.

JOHN T. HANKS, *Chairman*,  
CHARLES M. MCNEELY, *Vice-Chairman*.

THE SECOND INTERNATIONAL ORTHODONTIC CONGRESS will be held at the Hotel Great Central, London, England, July 20-24, 1931.

A full and interesting program of papers and demonstrations is anticipated, and a museum is being organized. Suitable entertainment for ladies accompanying members will be arranged. Intending contributors to the activities of the Congress can obtain from the secretaries of their respective orthodontic or dental societies the conditions under which contributions are invited. The Secretary-General (A. C. Lockett, 75 Grosvenor Street, London, W.1) also will be happy to give information on request.

Information regarding traveling facilities and hotel accommodations may be obtained from the official agents to the Congress, Messrs. Morgan Pope & Co., of 7 St. James's Street, London, S.W.1; 6 Rue Caumartin, Paris; 71 Vanderbilt Avenue, New York; and Messrs. Noel Vester & Co. (Agents), 44 Unter den Linden, Berlin.

J. H. BABCOCK, *President-General*,  
G. NORTHCROFT, *Vice-President General*,  
E. D. BARROWS, *Treasurer-General*,  
A. C. LOCKETT, } *Secretaries-General*.  
B. M. STEPHENS, }

DOES ANY MEMBER of the A. D. A. feel as though he should pass out of this life without ever having seen Pike's Peak? Perish the thought! Well, here's your chance. Go to the Denver Meeting, July 21-25, and square yourself with the world and your Association. The Mile High Convention will be a great affair!



